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MOTOR AGE

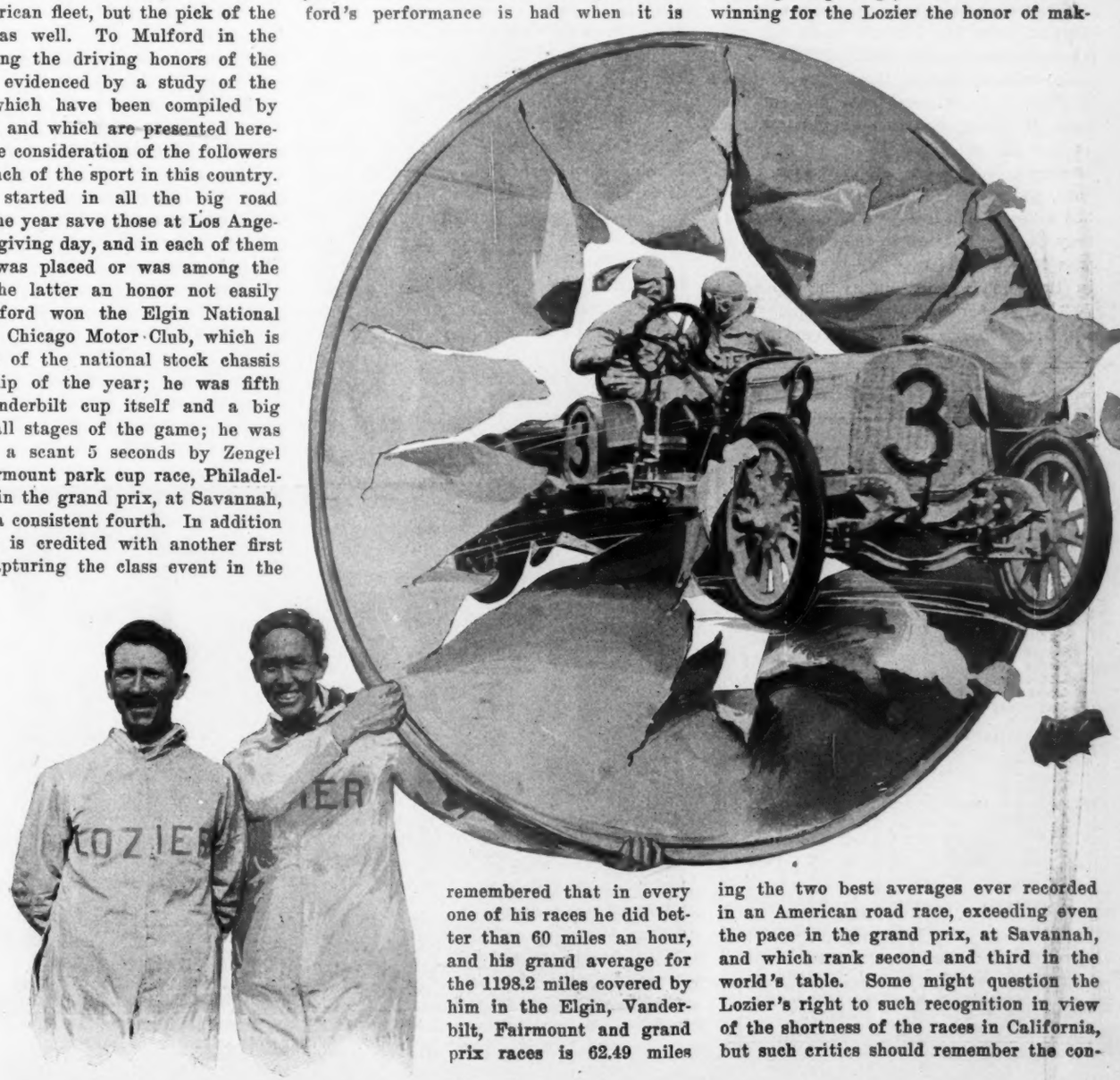
MOTOR AGE'S REVIEW OF 1910 ROAD RACING

By C. G. SINSABAUGH

UNQUESTIONABLY the road racing campaign of 1910 not only developed a champion driver in Ralph Mulford, but it also brought out forcibly the speed and stamina of the Lozier, which as a stock car pure and simple made the best record of the season, although pitted against many cars that were built for racing only and which included not only the cream of the American fleet, but the pick of the foreigners as well. To Mulford in the Lozier belong the driving honors of the year as is evidenced by a study of the statistics which have been compiled by Motor Age, and which are presented herewith for the consideration of the followers of this branch of the sport in this country.

Mulford started in all the big road events of the year save those at Los Angeles, Thanksgiving day, and in each of them he either was placed or was among the finishers, the latter an honor not easily won. Mulford won the Elgin National cup of the Chicago Motor Club, which is emblematic of the national stock chassis championship of the year; he was fifth in the Vanderbilt cup itself and a big factor at all stages of the game; he was beaten by a scant 5 seconds by Zengel in the Fairmount park cup race, Philadelphia; and in the grand prix, at Savannah, he landed a consistent fourth. In addition to this he is credited with another first through capturing the class event in the Fairmount park meet. This therefore gives him a record of two firsts, and one second out of five starts, which record in the opinion of the writer is better than that of any of the other 105 drivers who handled cars in American road races this year. An idea of the consistency of Mulford's performance is had when it is remembered that in every one of his races he did better than 60 miles an hour, and his grand average for the 1198.2 miles covered by him in the Elgin, Vanderbilt, Fairmount and grand prix races is 62.49 miles per hour for all four of these contests.

As for the Lozier car itself, it has even a better record than has Mulford, the star driver. Outside of Mulford's performances, the Lozier gained fame through the work of Teddy Tetzlaff at Los Angeles, and Horan at Savannah. The work of Tetzlaff on Thanksgiving day gave the Lozier great prestige, in that it resulted in winning for the Lozier the honor of making the two best averages ever recorded in an American road race, exceeding even the pace in the grand prix, at Savannah, and which rank second and third in the world's table. Some might question the Lozier's right to such recognition in view of the shortness of the races in California, but such critics should remember the con-



RALPH MULFORD, LOZIER, CHAMPION ROAD DRIVER OF THE 1910 SEASON

ditions under which those races were run. Tetzlaff won the 151-mile stock car race at an average pace of 73.22 miles an hour; then, without leaving the course and with a stop of 20 minutes only for the purpose of taking on fresh supplies, started in the 202-mile free-for-all, in which he averaged 71.31 miles per hour. This, therefore, gave this Lozier car a workout of 353 miles, which is a greater distance than travelled by Nazzaro in the Fiat, when he won the 328-mile race for the Florio cup, in Italy in 1908, at an average pace of 74.3 miles per hour, which stands as a world's record. Therefore, counting the two Los Angeles events as one race, which they practically were, gives the Lozier a joint average of 72:09 miles per hour for the 353 miles, which is more than enough to give it second place to the Fiat in the world's record table.

Reviewing the work of the Lozier, it develops that with a racing team of three drivers and three cars the Lozier company contested in every one of the big road events of the year. Counting the class race at Philadelphia as a start, this makes four firsts and one second out of eight starts. The three times the Lozier was unplaced, the cars finished, getting one fourth and two fifths, which is a remarkable showing, considering the class of the fields in these events. It also is interesting to do a little figuring and discover that in the seven times the Lozier ran, the cars covered a distance of 1,916 miles at an average pace of 65.21 miles per hour.

The road racing campaign of 1910, which came to an end on Thanksgiving day, was not quite as extensive as the one of 1909, although it can be considered more successful in that on the average more cars finished, and better speed was made. Also it was a greater success from the box office point of view, from the fact that money was made out of every race, with but one or two exceptions. In 1909 there were twenty-seven road races run, while in 1910 there were six fewer. Only seven of the 1909 fixtures were retained—the Vanderbilt, Fairmount park, Ferris cup, Wheatley Hills cup, Massapequa cup, Shettler cup and the desert race. The ones abandoned were the Cobe, the four races at Lowell, the Santa Rosa, the Denver, the Wemme, Portola, Indiana, the five events at Riverhead, the two races at Portland, and the Mount Baldy. In their places were substituted four races at Elgin, five additional class events at Philadelphia, three races at Savannah, and one additional at Los Angeles.

The statistics of the two years show that the competition on the road has greatly developed the speed and stamina of the American car. Whereas in 1909 the average pace of the winning cars in the twenty-seven races for 5,100 miles was 49.2, in 1910 the twenty-one winners averaged 53.8 miles per hour for 4,449 miles. In 1909 there were 223 cars that were contestants in the twenty-seven road races, whereas this year 206 started in six fewer events. In 1909 ninety-four of the 223 cars finished, while in 1910 eighty-two of

RECORD OF THE CARS

Name of car	Starts	First	Second	Third	Unplaced
Alco	3	1	0	0	2
Abbott-Detroit	9	1	1	0	7
Benz	15	2	1	0	12
Cole	8	1	0	1	6
Chadwick	4	2	0	0	2
Duro	2	1	0	0	1
Franklin	1	0	1	0	1
Falcar	7	1	2	1	3
Jackson	4	0	1	0	3
Kisselkar	4	1	0	0	3
Knox	3	0	0	1	3
Lozier	8	4	1	0	3
Lancia	2	1	0	0	1
Mercedes	3	0	0	1	2
Mercer	5	0	1	0	5
Marquette-Buick	5	0	0	1	4
Maxwell	6	1	1	1	3
Marmon	16	2	1	2	11
Marion	2	0	1	0	1
National	11	2	1	2	6
Pope-Hartford	7	0	2	1	4
Pullman	4	1	0	0	3
Petrel	1	0	0	1	0
Staver-Chicago	4	0	1	0	4
Stoddard-Dayton	5	0	1	1	3
Warren-Detroit	1	0	1	0	0
Westcott	2	0	0	1	1

Unplaced: Apperson, 6; American, 1; Amplex, 1; Buick, 1; Black Crow, 1; Cutting, 1; Corbin, 5; Cino, 1; Columbia, 1; Fiat, 4; Ford, 3; Houpt, 1; Isotta, 1; Lexington, 1; Mitchell, 1; Midland, 1; Matheson, 1; Overland, 1; Oakland, 1; Only, 1; Oldsmobile, 1; Otto, 2; Ohio, 2; Rambler, 1; Royal, 1; Simplex, 9; S. P. O., 1; Velie, 1.

DAVID BRUCE-BROWN, BENZ, WINNER OF AMERICAN GRAND PRIX

JOE DAWSON, MARMON, ONE OF THE MOST CONSISTENT DRIVERS OF THE YEAR

the 206 caught the eyes of the judges. The season just ending received the strongest kind of support from the manufacturers. The 206 cars that ran represented fifty-five different makes of cars, most of them American. Of course, it couldn't be expected that every one of the fifty-five should get a slice of the glory, but the honors were pretty well distributed, for twenty-seven of the makers are represented in the list of those finishing first, second or third. Fourteen of the twenty-seven won first places, which shows the evenness of the competition. The Lozier won four firsts, which included the Elgin National, two races at Los Angeles, and the class event at Philadelphia; the Benz is one of the two foreign makes in the winning list, the other being the Lancia, which won the Tiedeman cup, at Savannah. The biggest feather in the Benz bonnet is the grand prix, at Savannah, where Bruce-Brown by cool, calculating work defeated the best field that has faced the starter in the last 2 years. The other Benz first was that won by Eddie Hearne, who landed the Fox River cup, at the Elgin meet. The Marmon also won two races this year. One of these was the Kane County trophy, at Elgin, which was taken by Dave Buck, and the other the Savannah cup, at Savannah, won by Joe Dawson. The National was the winner of the Illinois cup, at Elgin, when Al Livingstone drove the car to victory, and a day later added to its fame by finishing second to Mulford in the Elgin National. Another first place was gained by Johnny Aitken at Philadelphia, when he won his class in the Fairmount park meet.

The Chadwick also is credited with two victories. One of these was the Fairmount park race itself, and the other a class victory at the same meet. The Alco is well satisfied with its performance in 1910, because it gratified its ambition to again win the Vanderbilt, which it did in a clever manner. Eight different makes of cars shared the honors in the small-car events of the year; one each going to the Abbott-Detroit, Cole, Duro, Falcar, Kisselkar, Lancia, Maxwell and Pullman.

Going back to 1909 for the purpose of comparisons, there were also fourteen different makes of cars which won races, but of these fourteen only three of them won brackets in 1910, the Marmon, Maxwell and Alco. The Chalmers, the star of 1909, did not support a racing team in 1910, and not a single Chalmers car started in any

HARRY F. GRANT, ALCO, TWICE WINNER OF THE VANDERBILT

RECORD OF THE DRIVERS

Name of Driver	Starts	First	Second	Third	Unplaced
Aitken	3	1	0	1	1
Arthur	1	0	0	1	0
Bruce-Brown	2	1	0	0	1
Burman	2	0	0	1	1
Buck	1	1	0	0	0
Costello	1	0	0	1	0
Cobe	2	0	1	0	1
De Hymel	3	0	1	1	1
Dawson	8	1	1	1	5
Dingley	3	0	2	0	1
W. Endicott	4	1	0	0	3
Fancher	1	1	0	0	0
Grant	3	1	0	0	2
Greiner	2	0	0	1	1
Gelnaw	3	1	0	0	2
Gellard	2	1	0	0	1
Hemery	1	0	1	0	0
Hughes	1	0	0	1	0
Heinemann	3	0	0	1	2
Herrick	1	1	0	0	0
Hamlin	1	0	1	0	0
Hearne	4	1	0	0	3
Jagersberg	2	0	0	1	1
Knipper	2	1	0	0	1
Knight	3	0	0	1	2
Livingstone	3	1	1	0	1
Mulford	5	2	1	0	2
Monsen	1	0	1	0	0
Miller	1	0	1	0	0
Monckmeier	1	0	0	1	0
McKeague	1	1	0	0	0
Nikrent	1	0	0	1	0
Pearce	3	0	2	0	1
Padula	2	1	0	0	1
Roebling	1	0	1	0	0
C. Smith	1	0	1	0	0
Tetzlaff	2	2	0	0	0
Tremaine	1	0	0	1	0
Witt	1	0	1	0	0
Zengel	2	2	0	0	0

Unplaced: C. Basle, 2; Belcher, 1; Brown, 1; M. Basle, 1; E. R. Bergdoll, 2; Bigelow, 1; Beardsley, 3; C. A. Bergdoll, 2; Betz, 2; L. Chevrolet, 1; A. Chevrolet, 2; Cohen, 2; Crane, 1; Disbrow, 2; De Palma, 1; Dearborn, 1; Doorley, 1; Drach, 1; H. Endicott, 4; Fouch, 1; Fleming, 1; Fritsch, 1; Frey, 3; Davis, 2; Greer, 1; Helm, 1; Horan, 1; Harroun, 4; Haupt, 3; Hanshue, 3; Harding, 4; Hardesty, 2; Hemwood, 2; Ireland, 1; Jones, 1; Jardine, 1; Juhasz, 1; Kulick, 2; Limberg, 1; Mitchell, 1; Maisonville, 1; Mitchell, 2; Mullen, 2; Matson, 4; Nazzaro, 1; L. Nikrent, 1; Oldfield, 1; Okerman, 1; Mort Roberts, 2; Mont Roberts, 2; Robertson, 1; Ryall, 2; Saynor, 1; Stinson, 1; Schiefler, 2; Stillman, 1; Stone, 1; Schillo, 1; Soules, 2; Schoeneck, 1; Wishart, 1; Wallace, 1; Wagner, 1; Wright, 1; Wilcox, 2; Yerger, 2.

KNIPPER, LANCIA, TIEDEMAN CUP WINNER

STATISTICS OF 1909-1910

	1910	1909
Number of road races	21	27
Number of miles	4,449	5,100
Average distance of each race	211	211
Average miles per hour each winner	53.8	49.2
Fastest road race	73.22	69.9
Slowest road race	26.41	24.8
Shortest road race	101	43.8
Number of starters	206	223
Average number of starters	9½	8¼
Number of cars allowed to finish	82	94

of the past season's road races. The Buick, which was the Chalmers' greatest rival the year previous, only had one starter in 1910, the company devoting all its energies in a racing way to the Marquette-Buick, which gained considerable fame by landing third place in the grand prix, it being the first American car to finish. Among those which won in 1909 and which did not win

THE LATE AL LIVINGSTONE

TABULATION SHOWING RESULTS OF TWENTY-ONE AMERICAN ROAD RACES DURING 1910 SEASON

Race	Date	Car	B. & S.	Driver	No. starters	No. finish	Distance	Time	M. P. H.
Grand Prix.	Nov. 12	Benz	6.1x7.87	D. Bruce-Brown	15	6	415.2	353:05.35	70.55
Savannah, Ga.	Second	Benz	6.1x7.87	V. Hemery				353:06.77	70.55
Savannah Automobile Club	Third	Marquette-Buick	6 x5.25	R. Burman				371:23.49	67.07
	Fourth	Lozier	5⅜x6	R. Mulford				386:12.68	64.50
	Fifth	Lozier six	4⅝x5½	W. Horan				390:02.72	63.87
	Sixth	Marmon	4½x5	Dawson-Harroun				390:22.22	63.39
Also started: Fiat, de Palma; Fiat, Nazzaro; Pope-Hartford, C. Basle; Fiat, L. Wagner; Benz, Haupt; Alco six, Grant; Marquette-Buick, A. Chevrolet; Pope-Hartford, Disbrow; Marmon, Dawson									
Elgin National	Aug. 27	Lozier	5⅜x6	R. Mulford	13	4	302.5	292:29.84	62.5
Elgin, Ill.	Second	National	5 x5 11/16	A. Livingstone				304:10.90	60.2
Chicago Motor Club	Third	National	5 x5 11/16	A. Greiner				313:23.3	58.4
	Fourth	Simplex	5¾x5¾	G. Robertson				332:20.98	54.9
Also started: Simplex, Saynor; Knox, Oldfield; Marmon, Dawson; Black Crow, Stinson; Jackson, Schiefler; Matheson, C. Basle; Kisselkar, H. Endicott; Alco six, Grant; Marmon, Harroun									
Vanderbilt Cup	Oct. 1	Alco six	4¾x5½	H. Grant	30	10	278.08	255:58	65.18
Long Island Parkway	Second	Marmon	4½x5	J. Dawson				256:23.51	65.07
Motor Cups Holding Co.	Third	National	5 x5 11/16	J. Aitken				257:29.74	64.7
	Fourth	National	5 x5 11/16	L. Disbrow				264:08.24	63.6
	Fifth	Lozier	5⅜x6	R. Mulford				264:33.59	63.1
	Sixth	Pope-Hartford	4¾x5½	J. Fleming				266:37.47	62.5
	Seventh	Simplex	5¾x5¾	L. Mitchell				272:01.69	61.3
	Eighth	Benz	5 x6	E. Hearne				272:25.27	61.2
	Ninth	Stoddard-Dayton	5 x5½	H. Harding				273:34	60.09
	Tenth	Pope-Hartford	4¾x5½	B. Dingley				277:73	59.9
Also started: Oldsmobile, Stillman; Benz, Bruce-Brown; National, Livingstone; Amplex, Jones; Simplex, Beardsley; Apperson, Hanshue; Mercedes, Wishart; Houpt-Rockwell, Limberg; Marquette-Buick, L. Chevrolet; Marmon, Harroun; Jackson, Schiefler; Stoddard-Dayton, De Hymel; Marquette-Buick, Burman; Corbin six, Matson; Marquette-Buick, A. Chevrolet; American, Wallace; Benz, Heim; Knox six, Belcher; Royal Tourist, Jardine; Columbia, Stone										
City of Philadelphia Cup	Oct. 8	Chadwick six	5 x6	L. Zengel	32	9	202.5	209:07.88	58.10
Fairmount Park, Philadelphia	Second	Lozier	5⅜x6	R. Mulford				209:13.30	58.07
Quaker City Motor Club	Third	Stoddard-Dayton	5 x5½	T. De Hymel				217:42.95	55.81
	Fourth	National	5 x5 11/16	J. Aitken				222:20.75	54.64
	Fifth	Mercedes	5½x6	Jagersberger				223:18.74	54.41
	Sixth	Jackson	4⅞x4¾	H. Cobe				226:13.16	53.70
	Seventh	Westcott		H. Knight				232:44.87	52.20
	Eighth	Pullman	4 1-32x5	Gellard				237.04	51.24
	Ninth	Apperson	5¾x5¾	G. Davis				243:42.05	49.17
Also started: Mercer, Frey; Marmon, Harroun; Otto, Yerger; Abbott-Detroit, Padula; Abbott-Detroit, Mortimer Roberts; Ford, Kulick; Benz, Haupt; National, Wilcox; Cole, H. Endicott; Benz, E. R. Bergdoll; Marmon, Dawson; Benz, Hearne; Chadwick, Mitchell; Simplex, Mullen; Corbin, Matson; Simplex, Beardsley; Apperson, Hanshue; Cole, W. Endicott; Stoddard-Dayton, Harding; Abbott-Detroit, Montague Roberts; Pullman, Hardesty; Benz, C. A. Bergdoll; Simplex, Betz										
Free-for-All	Nov. 24	Lozier	5⅜x6	T. Tetzlaff	8	2	202	169:59	71.31
Santa Monica Meet	Second	Pope-Hartford	4¾x5½	B. Dingley				184:47	65.59
Los Angeles, Cal.	Third	Knox	5 x4¾	J. Nikrent	Did not finish; given position				
Also started: Fiat, Dearborn; Ohio, Hemwood; Apperson, Ryall; Isotta, Soules; Only,									
Ferris Cup	Nov. 24	Lozier	5⅜x6	T. Tetzlaff	5	2	151.5	124:10	73.22
301-600, stock car	Second	Pope-Hartford	4¾x5½	B. Dingley				130:00⅗	69.93
Los Angeles, Cal.									
Also started: Franklin, Soules; Knox, Brown; Apperson, Ryall.									
Illinois Cup	Aug. 26	National	5 x5 11/16	A. Livingstone	8	5	203	201:08.53	60.6
Elgin, Ill.	Second	Falcar	4⅛x5¼	W. H. Pearce				211:19.22	57.02
Chicago Motor Club	Third	Marmon	4½x5	J. Dawson				214:09.62	56.09
	Fourth	National	5 x5 11/16	A. Greiner				222:15.30	54.8
	Fifth	Midland	4½x5	R. Ireland				222:30.10	54.7
Also started: Falcar, Gelnaw; Lexington, Drach; Kisselkar, H. Endicott									
Kane County Cup	Aug. 26	Marmon	4½x4½	D. Buck	7	4	167	184:45.79	55.1
Elgin, Ill.	Second	Marion	4¼x4½	A. Monsen				187:52.65	54.2
Chicago Motor Club	Third	Marmon	4½x4½	L. Heinemann				199:20.27	51.09
	Fourth	Overland	4¼x4¼	A. Schillo				220:04.15	46.2
Also started: Corbin, Matson; Kisselkar, Schoeneck; Cino, Fritzsch.									

a race in 1910, were the Pope-Hartford, Simplex, Apperson, Fiat, Stoddard-Dayton, Palmer Singer, Cadillac, Sharp-Arrow and

THE LATE TOBIN DE HYMEL

STARTING AND FINISHING

Race	Distance	No. starters	No. finishes
Grand Prix	415.2	15	6
Vanderbilt	278.08	30	10
Elgin National	302.5	13	4
Fairmount	202.5	32	9
601-750 class, Philadelphia	202.5	6	1
451-600 class, Philadelphia	202.5	6	4
301-450 class, Philadelphia	202.5	8	3
231-300 class, Philadelphia	202.5	6	1
161-230 class, Philadelphia	202.5	6	0
Illinois cup	203	8	5
Fox River	135	6	3
Kane County	167	7	4
Wheatley Hills	189.6	7	2
Massapequa	124.6	5	3
Desert race	418	14	11
Savannah cup	276.8	6	3
Tiedeman cup	190.3	8	5
Santa Monica free-for-all	202.8	8	2
Ferris cup	151.5	5	2
Santa Monica, 231-300	101	7	3
Santa Monica, 161-230	101	3	1

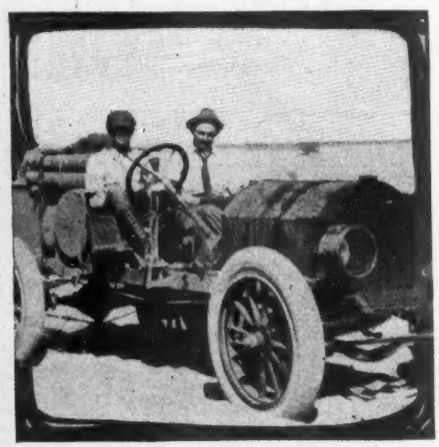
W. ENDICOTT, COLE, MASSAPEQUA WINNER

TABULATION SHOWING RESULTS OF TWENTY-ONE AMERICAN ROAD RACES DURING SEASON OF 1910

Race	Date	Car	B. & S.	Driver	No. starters	No. finish	Distance	Time	M. P. H.
Fox River Cup	Aug. 26	Benz	3½x5½	E. Hearne	6	3	135	150:40	54.1
Elgin, Ill.	Second	Warren-Detroit	4 x4½	A. Miller				176:11.62	46.1
Chicago Motor Club	Third	Staver	4 x4	G. Monckmeier				181:05.57	44.9
Also started: Staver, Crane; Cole, W. Endicott; Staver, Cheney									
Wheatley Hills Cup	Oct. 1	Falcar	4⅛x5¼	J. Gelnaw	7	2	189.6	194:39	58.4
Long Island Parkway	Second	Falcar	4⅛x5¼	W. Pearce				205:01.73	55.4
Motor Cups Holding Co.									
Also started: Marmon, Heinemann; S. P. O., Juhasz; Marion, M. Basle; Corbin, Maisonville; Mercer, Frey									
Massapequa Cup	Oct. 1	Cole	4 x4	W. Endicott	5	3	124.6	138:04.32	55.73
Long Island Parkway	Second	Abbott-Detroit	4 x4½	M. Roberts				143:02.13	53.02
Motor Cups Holding Co.	Third	Cole	4 x4	E. Edmunds				147:15.6	51.50
Also started: Lancia, Knipper; Abbott-Detroit, Padula.									
601-750 Class	Oct. 8	Chadwick six	5 x6	L. Zengel	6	1	202.5	209:07.88	58.10
Fairmount Park, Philadelphia									
Quaker City Motor Club									
Also started: Benz, E. R. Bergdall; Chadwick, Mitchell; Simplex, Mullen; Simplex, R. Beardsley; Simplex, Betz.									
457-600 Class	Oct. 8	Lozier	5⅜x6	R. Mulford	6	4	202.5	209:13.30	58.07
Fairmount Park, Philadelphia	Second	Stoddard-Dayton	5 x5½	T. De Hymel				217:42.95	55.81
Quaker City Motor Club	Third	Mercedes	5½x6	H. Jagersberger				223:18.74	54.44
Also started: Apperson, Davis; Apperson, Hanshue; Stoddard-Dayton, Harding.									
301-450 Class	Oct. 8	National	5 x5½	J. Aitken	8	3	202.5	222:20.75	54.64
Fairmount Park, Philadelphia	Second	Jackson	4⅞x4¾	H. Cobe				226:13.16	53.70
Quaker City Motor Club	Third	Westcott		H. C. Knight				232:44.87	52.20
Also started: Marmon, Harroun; Benz, Haupt; National, Wilcox; Benz, C. A. Bergdoll									
231-300 Class	Oct. 8	Pullman	4 1-32x5	E. Gellard	6	1	202.5	237:04	51.24
Fairmount Park, Philadelphia									
Quaker City Motor Club									
Also started: Mercer, Frey; Otto, Yerger; Marmon, Dawson; Corbin, Matson; Pullman, Hardesty									
161-230 Class	Oct. 8	Abbott-Detroit	4 x4½	V. Padula	6	0	202.5	235:27	*
Fairmount Park, Philadelphia									
Quaker City Motor Club									
Also started: Abbott-Detroit, Mort Roberts; Ford, Kulick; Cole, H. Endicott; Cole, W. Endicott; Abbott-Detroit, Montague Roberts.									
* Running in twenty-third lap when stopped and given race									
Savannah Cup	Nov. 11	Marmon	4 23-61x5	J. Dawson	6	3	276.8	263:39.98	62.75
Savannah, Ga.	Second	Mercer	4⅜x5	W. Roebling				275:25.25	60.11
Savannah Automobile Club	Third	Falcar	4⅛x5¼	H. Hughes				286:11.34	58.03
Also started: Marmon, Heinemann; Falcar, Gelnaw; Falcar, Pearce									
Tiedeman Cup	Nov. 11	Lancia	4 x4⅜	W. Knipper	8	5	190.3	199:22.67	57.27
Savannah, Ga.	Second	E-M-F	4 x4½	Witt				206:34.22	55.11
Savannah Automobile Club	Third	Maxwell	4¼x4⅛	T. Costello				219:19.06	52.06
	Fourth	Maxwell	4¼x4⅛	Wright				219:23.24	52.04
	Fifth	Maxwell	4 x4	M. Doorley				236:07.35	48.35
Also started: E-M-F, Cohen; Cole, Knight; Cole, W. Endicott.									
Desert Race	Nov. 5-7	Kisselkar	4⅞x4¾	H. Herrick	14	11	418	15:49.00	26.41
Los Angeles, Cal., to	Second	Franklin six	4 x4	R. Hamlin				16:16.00	25.68
Phoenix, Ariz.	Third	Pope-Hartford		W. Tremaine				17:17.00	24.18
Also finished: Mercer, Bigelow, 19:03.00; Velie, Stickney, 19:54.00; Parry, Dull, 20:13.00; Duro, Gates, 20:21.00; Ohio, Hemwood, 21:04.00; Apperson, Curtis, 21:11.00; Rambler, Sheriff, 23:50.00; Ford, Stearns, 28:23.00. Failed to finish: Abbott-Detroit, Bary; Maxwell, Smith; Knox									
Shettler Cup	Nov. 24	Duro	4⅛x5¼	McKeague	7	3	101	101:04	59.96
231-300 Class	Second	Maxwell	4¼x4¼	Smith				104:15	58.11
Los Angeles, Cal.	Third	Petrel	4⅜x4¾	Arthur				118:48	51.0
Also started: Mitchell, Greer; Mercer, Bigelow; Buick, L. Nikrent; Cutting.									
Light Car Race	Nov. 24	Maxwell	4 1/16x4¼	Fancher	3	1	101	102:31	59.11
161-230 Class									
Los Angeles, Cal.									
Also started: Oakland, Kerman; Staver, Fouch.									

AVERAGES MADE BY ALL CARS FINISHING IN TWENTY-ONE AMERICAN ROAD RACES IN 1910

M.P.H.	Dist.	Car	Driver	Race
73.22	151	Lozier	Tetzlaff	Los Angeles
71.31	202	Lozier	Tetzlaff	Los Angeles
70.55	415.2	Benz	Bruce-Brown	Grand Prix
70.55	415.2	Benz	Hemery	Grand Prix
69.93	151	Pope-Hartford	Dingley	Los Angeles
67.07	415.2	Marquette-Buick	Burman	Grand Prix
65.59	202	Pope-Hartford	Dingley	Los Angeles
65.18	278.08	Alco	Grant	Vanderbilt cup
65.07	278.08	Marmon	Dawson	Vanderbilt
64.7	278.08	National	Aitken	Vanderbilt
64.50	415.2	Lozier	Mulford	Grand Prix
63.87	415.2	Lozier	Horan	Grand Prix
63.6	278.08	National	Disbrow	Vanderbilt
63.39	415.2	Marmon	Dawson-Harrour	Grand Prix
63.1	278.08	Lozier	Mulford	Vanderbilt
62.75	276.8	Marmon	Dawson	Savannah
62.5	302.5	Lozier	Mulford	Elgin National
62.5	278.08	Pope-Hartford	Fleming	Vanderbilt
61.3	278.08	Simplex	Mitchell	Vanderbilt
61.2	278.08	Benz	Hearne	Vanderbilt
60.11	276.8	Mercer	Roebling	Savannah cup
60.6	203	National	Livingstone	Illinois cup
60.2	302.5	National	Livingstone	Elgin National
60.09	278.08	Stoddard-Dayton	Harding	Vanderbilt
59.96	101	Duro	McKeague	Los Angeles
59.11	101	Maxwell	Fancher	Los Angeles
59.9	278.08	Pope-Hartford	Dingley	Vanderbilt
58.11	101	Maxwell	Smith	Los Angeles
58.4	302.5	National	Greiner	Elgin National
58.4	189.6	Falcar	Gelnaw	Wheatley Hills
58.03	276.8	Falcar	Hughes	Savannah cup
58.10	202.5	Chadwick	Zengel	Fairmount
58.10	202.5	Chadwick	Zengel	601-750, Phila.
58.07	202.5	Lozier	Mulford	451-600, Phila.
58.07	202.5	Lozier	Mulford	Fairmount
57.27	190.3	Lancia	Knipper	Tiedemann cup
57.02	203	Falcar	Pearce	Illinois cup
56.09	203	Marmon	Dawson	Illinois cup
55.81	202.5	Stoddard-Dayton	De Hymel	451-600, Phila.
55.81	202.5	Stoddard-Dayton	De Hymel	Fairmount
55.73	124.6	Cole	W. Endicott	Massapequa
55.4	189.6	Falcar	Pearce	Wheatley Hills
55.11	190.3	E-M-F	Witt	Tiedemann cup
55.1	167	Marmon	Buck	Kane County
54.9	302.5	Simplex	Robertson	Elgin National
54.8	203	National	Greiner	Illinois cup
54.7	203	Midland	Ireland	Illinois cup
54.64	202.5	National	Aitken	301-450, Phila.
54.64	202.5	National	Aitken	Fairmount
54.41	202.5	Mercedes	Iagersburger	Fairmount
54.41	202.5	Mercedes	Iagersburger	451-600, Phila.
54.2	167	Marion	Monsen	Kane County
54.1	135	Benz	Hearne	Fox River
53.70	202.5	Jackson	Cobe	Fairmount
53.02	124.6	Abbott-Detroit	Roberts	Massapequa
52.20	202.5	Westcott	Knight	301-450, Phila.
52.20	202.5	Westcott	Knight	Fairmount
52.06	190.3	Maxwell	Costello	Tiedemann cup
51.24	202.5	Pullman	Gellard	231-300, Phila.
51.24	202.5	Pullman	Gilliard	Fairmount
51.09	167	Marmon	Heinemann	Kane County
51.50	124.6	Cole	Edmunds	Massapequa
51.0	101	Petrel	Arthur	Los Angeles
49.17	202.5	Apperson	Davis	Fairmount
48.35	190.3	Maxwell	Doorley	Tiedemann cup
46.2	167	Overland	Schillo	Kane County
46.1	135	Warren-Detroit	Miller	Fox River
44.9	135	Staver	Monckmeier	Fox River
26.41	418	Kisselkar	Herrick	Desert race
25.68	418	Franklin	Hamlin	Desert race
24.18	418	Pope-Hartford	Tremaine	Desert race
21.94	418	Mercer	Bigelow	Desert race
20.10	418	Velie	Stickney	Desert race
20.06	418	Parry	Dull	Desert race
20.05	418	Duro	Gates	Desert race
19.84	418	Ohio	Hemwood	Desert race
19.73	418	Apperson	Curtis	Desert race
17.53	418	Rambler	Sheriff	Desert race
14.72	418	Ford	Stearns	Desert race



HERRICK, KISSEL, DESERT RACE WINNER

Colburn. Undoubtedly the drivers of the contesting cars were the big factors in the road racing contests of 1910. Many a good car was beaten because its entrant did not have a skillful pilot, for in many cases drivers were selected who had not had road racing experience. When they were submitted to the heavy firing they were found lacking and in most cases finished among the also-rans. The recent season, however, produced many new stars. In fact, it is a case of new blood all through the list of winning drivers. The big stars of 1909 have fallen by the wayside, and the new generation promises a brilliant future for the American racing world. Of the men who started in 1910—Dingley, Robertson, Louis Chevrolet, Hanshue, Matson, Grant, Fleming, Harroun, Knipper, Burman, de Palma and See—Grant and Knipper are the only ones who won a race in the past season. Dingley, the star of 1909, when he won two races, was shoved into the background by the new generation, and had it not been for the Los Angeles events, where he won two seconds, he would have been ranked among the also-rans. In justice to de Palma it might be explained that he drove in only one road race and that the grand prix, in which he was robbed of a possible victory by a breakdown, when the finishing tape almost was in sight. Louis Chevrolet drove in only one road race and that the Vanderbilt, after which he retired from the racing game.

TEDDY TETZLAFF, LOZIER, HOLDER OF RECORDS

In 1910 there were 106 different drivers who took part in the twenty-one contests, and of these only eighteen were winners. This roll of honor includes Mulford, Tetzlaff and Zengel, with two each, and Dawson, Aitken, Bruce-Brown, Dave Buck, Bill Endicott, Grant, Fancher, Gelnaw, Gellard, Herrick, Hearne, Knipper, Livingstone, McKeague and Padula, with one each. Besides Chevrolet, de Palma, Hanshue and Robertson, the list of also-rans include Fleming, Harroun, Nazzaro, Oldfield and Wagner, men you usually look upon as winners when they come to the tape.

Mulford did not win his title as champion driver of the year without competition. Indeed it was possible that Joe Dawson ought to be given a higher ranking than the one with which he is credited. Dawson's work was gilt-edged throughout the season, and had he been in a bigger car, Mulfard would have had to look to his laurels. In most of the events in which Dawson participated, he was forced to go out of his class, and yet he managed to run

second to Grant in the Vanderbilt in his little Marmon, beaten only by a matter of 25 seconds. The difference between Mulford and Dawson is best explained by the fact that where Mulford in most cases was able to run well within the powers of his car, Dawson had to open his throttle to its limit and travel all out in order to hold his own in the fast company in which he was traveling. The Indianapolis lad, who was one of the speedway stars of the season, undoubtedly is one of the greatest of American drivers and one whose work should be closely watched in the future.

This man Tetzlaff who is entitled to a high ranking is an unknown quantity. While he won two races in California in record time, still it must be admitted that the competition he had on the Pacific coast was not of the class against which Dawson and Mulford competed. Outside of Bert Dingley there wasn't a driver at Los Angeles who ever before had been heard of in other sections of the country. While due credit should be given Tetzlaff for his grand work, it is the opinion of the critics that he hardly is entitled to very high ranking among the other drivers as yet. David Bruce-Brown, winner of the grand prix, is a youngster of great promise. He drove only twice in 1910, but his work at Savannah, when he followed out a carefully planned schedule, shows that he is to be reckoned with hereafter.

Harry Grant should be well satisfied with his one victory, for the Vanderbilt win represents the ambition of Grant's life—to capture the American classic twice, and to do it twice in succession and in the same car. Therefore, Grant probably does not feel at all humiliated because of his defeat at Elgin and Savannah, where on both occasions he met with mishaps which put him out of the running early in the fray.

Taking the drivers who achieved fame in the small-car races, the past season developed Bill Endicott and Eddie Hearne as pilots of ability. Bill Knipper already had won his spurs and therefore it is not surprising that he should have won the Tiedeman cup as easily as he did. Undoubtedly he would have added to his laurels and would have won the Massapequa cup at the Vanderbilt meet, had it not been for an accident which occurred when he had the race well in hand.

Poor Al Livingstone should not be forgotten in reviewing the work of the pilots of 1910, for the death of this rising star at Atlanta undoubtedly robbed the racing world of a driver who was rapidly climbing to the top. Indeed it is a question if Livingstone should not be ranked third to Mulford and Dawson for the season. He won the Illinois cup, at Elgin, and performed brilliantly the following day when he was second to Mulford in the Lozier in the Elgin National race itself. He had hard luck in the Vanderbilt and had planned to go to California and participate in the Santa Monica events, where undoubtedly he would have been a big

LEN ZENGEL, CHADWICK, WINNER OF FAIRMOUNT PARK RACE

factor because of his skill and daring. Also he probably would have driven at Savannah where he would have had another chance to add to his fame.

Racing in 1910 resulted in the death of more celebrities than in the previous season. Livingstone was not the only one to pay the penalty for his daring, for the mortuary list also contains the names of several other well-known drivers. Tobin DeHymel, a lad of great promise, met death in a track race at San Antonio after he had shown he was in line for great honors in the driving world. DeHymel had driven in the Vanderbilt and in the Fairmount park races. In the latter he had performed most consistently, getting third place, and great things were expected of him in the future. Another to cross the great divide was W. H. Sharp, manufacturer of the Sharp-Arrow, who died as a result of injuries sustained in training for the grand prix, at Savannah. Tom Kincade, of the National team, met death on the Indianapolis speedway.

HEMERY, BENZ, SECOND IN GRAND PRIX

AMERICAN AND EUROPEAN MILE-A-MINUTE ROAD RACES

M.P.H.	Dis.	Race	Winner	Date
74.3	328.2	Florio cup, Italy	Nazzaro, Fiat	1908
73.22	202	Los Angeles, U. S. A.	Tetzlaff, Lozier	1910
71.31	151	Los Angeles, U. S. A.	Tetzlaff, Lozier	1910
70.61	478	Grand Prix, France	Nazzaro, Fiat	1907
70.55	415.2	Grand Prix, U. S. A.	Bruce-Brown, Benz	1910
69.6	113.7	Riverhead, U. S. A.	Chevrolet, Buick	1909
69.5	478	Grand Prix, France	Lautenschlager, Mercedes	1908
65.18	278	Vanderbilt, U. S. A.	Grant, Alco	1910
65.7	148.2	Portola, U. S. A.	Fleming, Pope-Hartford	1909
65.6	304	Florio cup, Italy	Minola, Isotta	1907
65.5	313	Florio cup, Italy	Raggio, Itala	1905
65.4	208.8	Normandie, France	Boillot, Lion-Peugeot	1909
65.3	304	Florio cup, Italy	Sagno, Itala	1907
65.3	262.5	Targa Bologna, Italy	Porporato, Berliet	1908
65.1	258.6	Savannah Grand Prix, U. S. A.	Wagner, Fiat	1908
64.4	202	Los Angeles, U. S. A.	Hanshue, Apperson	1909
64.3	258.6	Vanderbilt, U. S. A.	Robertson, Locomobile	1908
64.2	234.6	Motor Parkway, U. S. A.	Lytie, Isotta	1908
63.7	254.1	Portola, U. S. A.	Fleming, Pope-Hartford	1909
63.6	136.5	Riverhead, U. S. A.	Sharp, Sharp-Arrow	1909
63.3	774	Grand Prix, France	Szisz, Renault	1906
62.75	276.8	Savannah, U. S. A.	Dawson, Marmon	1910
62.8	278	Vanderbilt, U. S. A.	Grant, Alco	1909
62.5	302.5	Elgin National, U. S. A.	Mulford, Lozier	1910
62.4	211	Portola, U. S. A.	Hanshue, Apperson	1909
62.4	227.5	Riverhead, U. S. A.	De Palma, Fiat	1909
61.4	283	Vanderbilt, U. S. A.	Hemery, Darracq	1905
60.8	297.1	Vanderbilt, U. S. A.	Wagner, Darracq	1906
60.6	203	Illinois cup, U. S. A.	Livingstone, National	1910
60.3	340	Bennett cup, Germany	Thery, Brasier	1904
60.1	375	Ardennes, Belgium	Guinness, Minerva	1907

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Campaigning the Farmer

THOSE manufacturers who have waged a special campaign in farming communities during the past season have learned many important lessons regarding what the farmer wants in a car. To some these wants have proven an expensive lesson. It has been apparent that the majority of farmers prefer a touring car to a runabout, and to many of them the touring car with the demountable tonneau is an attractive proposition. Families of three or four are more common in the country than in the city, and where the farmer uses the car to visit a neighboring town, attend a picnic, go to church, or any of the other numerous engagements, it is rarely that one or two go, but more generally there are four or sometimes five passengers. Because of this concerns that have pinned their entire faith on runabout cars for the farmer's use have discovered their error. The runabout may be attractive to a few but not to the masses.

WITH many farmers the pleasure car should also be convertible into a business car. That farmer who visits the market once a week with a light load of dairy produce and vegetables cannot be expected to use his democrat wagon when on pleasure trips he uses his motor car. To meet these requirements it would be beneficial for manufacturers to build a special combination pleasure and business body for cars. This would be along the lines of a demountable tonneau for which could be substituted a light carrying platform, or an express body design, or an enclosed compartment as used on a delivery wagon. These business bodies could be sold at a small additional sum and with them a field of attraction to the farmer of the motor car would be quadrupled.

WHEN purchasing a motor car the farmer looks upon the pleasure that can be obtained from its use, and if that pleasure can be extended into his business field then his possibilities of buying are vastly increased. With such a condition the farmer can be induced to buy a car as much for its economy in the business department as for the pleasure he would expect to gain from it. It is only a short time until many of the farm duties will be accomplished by the motor car and why not get the thin edge of the wedge entered at once in this combination pleasure and business field? Many of the farmers have through their own ingenuity developed this field.

THERE is an immense field of development along the out-of-the-ordinary uses of the car. The variety of this field has been demonstrated in every state: One farmer has added a crate so that live stock such as sheep, swine, and calves can be transported on his car; another has utilized the car as a source of power for sawing logs or grinding grain; in the town an enterprising piano merchant has added a two-wheeled trailer upon which at the rear of his car he is able to carry a piano or organ; and the variety of uses could be continued until a big list is compiled. This activity all shows the possibility of the field and the manufacturer should aim to develop this field. Up to the present the demand has been so great that the manufacturer has had his hands full building enough conventional types of cars to supply the demand. With some this demand has been filled and cars left unsold. What such manufacturer should do is to organize a special body department to investigate and bring out body types suitable for the thousand and one uses to which the car may be put.

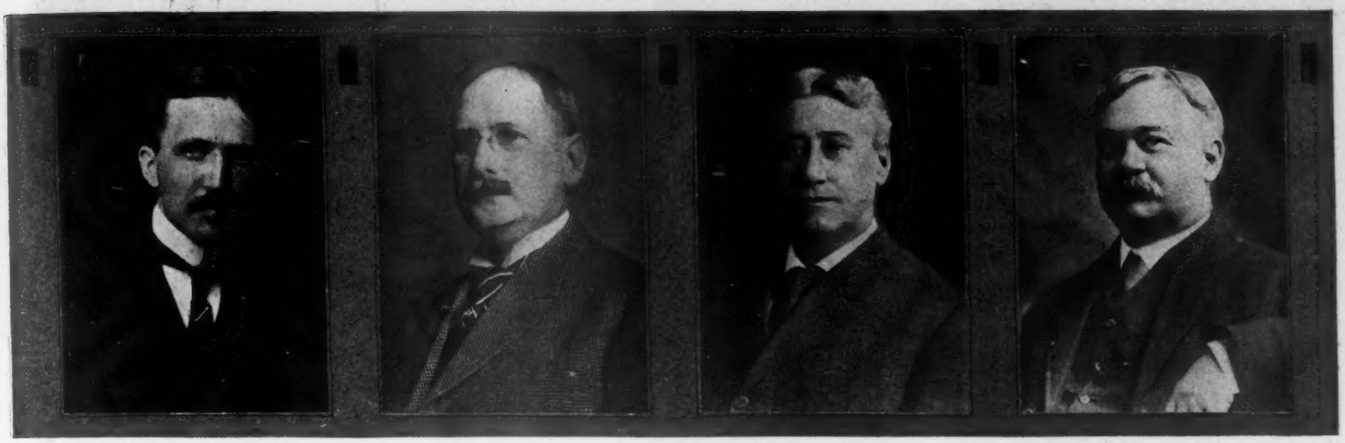
1911 Contest Problems

FOR next year there should be a better proportion among the racing, reliability, hill-climbing, touring, and economy contests. During this season there have been too many racing events in proportion to the number of reliability runs, and tours. The total number of concerns participating in racing events is fewer than that participating in reliability runs and tours, yet there have been more racing events than reliability runs and tours combined. The result of this is that many concerns not in favor of racing have brought forth the charge of favoritism, that is, giving too much attention to the racing end. Undoubtedly this has been an unconscious error during the present season. The racing situation has gained prominence because of its financial returns. In track events the gate receipts are appetizing factors which do not enter into hill-climbs, reliability runs, and economy tests. During the present year it has been an expense to many clubs to promote reliability runs and hill-climbs. In not a few cases the net result has been a loss to the club. There is no reason why a club, operating for the benefit of the industry, should not derive some financial returns at least for its efforts.

IT would be better if next year more interest were devoted to the touring situation. Each state in the union should have its "all-state tour," that is, a tour embracing the leading towns and cities and threading those rural territories in which the motor business can be developed. With many manufacturers the real value of tours has been missed. This has in some cases been due to the lack of club work. There has not been sufficient publicity and the people in the towns passed through have not been sufficiently informed regarding the date of the tour and the names of the contesting parties in it. There should be a general publicity campaign conducted before the tour through the country it traverses, so that the citizens therein are fully informed as to the important details of the run. This can be accomplished through the local press whether daily or weekly. It is only by such a publicity campaign that that enthusiasm which should be demonstrated at every place can be obtained. Without this enthusiasm the tour largely resolves itself into a strife between manufacturers, which is in the end reduced to an advertising campaign for the winner. Every car in a reliability contest, if it has merit, should benefit directly from such contests. The spoils do not all go to the winners. It is, however, largely up to the promoting body as to the benefits the different contestants derive.

SO far as hill-climbs are concerned they are, perhaps, one of the great stimulators of interest if conducted adjacent to some center of population. The short bursts of speed seen in these tests never fail to enthuse the spectator and to develop greater interest in motoring. There should be more hill-climbs if for no other reason than the missionary work they do in the matter of promoting car sales. Economy contests have not proved popular up to the present because of the relatively low price of fuel and the demand of buyers for power from a carbureter rather than for economy. The prospects are that for next season there will be additional interest in the economy phase of motoring, and it may be that the use of heavier fuels than gasoline will be exploited by not a few of the manufacturers. This would seem probable because of results along this line that have already been obtained. The increased interest in the commercial xehicle would also indicate this.

HOOPER SUCCEEDS SPEARE AS A. A. A. LEADER



NEW A. A. A. OFFICIALS—R. P. HOOPER, F. M. JOYCE, F. C. DONALD AND C. L. BONIFIELD

NEW YORK, Dec. 2—Robert P. Hooper, of Pennsylvania, yesterday was elected president of the American Automobile Association in the concluding session of its ninth annual meeting, held in the Hotel Belmont. Indicating to the west that the association is country-wide in its desired growth, the directors voted to change the charter so as to make it possible to select any city as the place for holding the annual assembly.

In the makeup of the executive committee the west received representation, which further accentuated the desire to extend and maintain the influence of the organization from coast to coast, and the following list of officers and committee tells its own story:

President—Robert P. Hooper, Pennsylvania.
First Vice President—Frank M. Joyce, Minnesota.
Second Vice President—F. C. Donald, Illinois.
Third Vice President—C. L. Bonifield, Ohio.
Fourth Vice President—F. G. Webb, New York.
Fifth Vice President—F. L. Baker, California.
Secretary—John N. Brooks, Connecticut.
Treasurer—H. A. Bonnell, New Jersey.
Executive Committee—A. G. Batchelder, chairman; Lewis R. Speare, Massachusetts; A. H. Knoll, New York; J. P. Coghlin, Massachusetts; Frank G. Webb, New York; A. D. Converse, Massachusetts; H. L. Vail, Ohio; C. M. Robinson, Connecticut; M. C. Moore, Wisconsin; P. J. Walker, California; John Bancroft, Delaware; F. C. Battey, Georgia; Ralph W. Smith, Colorado; E. C. Smith, Vermont; David Beecroft, Illinois; Stedman Bent, Pennsylvania; C. H. Gillette, Connecticut; J. H. Edwards, New Jersey; Paul C. Wolff, Pennsylvania; Edwin S. George, Michigan; H. M. Rowe, Maryland; James T. Drought, Wisconsin; C. A. Quigley, Utah; S. D. Capen, Missouri; Sam T. Atkinson, Virginia; H. L. Gordon, Ohio; Charles M. Doe, Rhode Island; F. E. Edwards, Illinois; A. E. Lerche, Massachusetts; S. A. Miles, N. A. A. M.; Alfred Reeves, A. L. A. M.

President L. R. Speare opened the meeting and then gave way to Mr. Hooper, upon the unanimous acceptance of the report of the nominating committee, of which C. H. Gillette, of Connecticut, served as chairman.

After taking the chair, President Hooper announced the appointment of the chairman of the national boards. Present incumbents were reappointed with the exception of the touring information board, Howard Longstreth, of the Automobile Club of Philadelphia, succeeding Powell Evans of the same club. The holdovers were: Good roads, George C. Diehl; legislative, Charles Thaddeus Terry; contest, S. M. Butler. Retiring Chairman Evans was thanked for his efforts, which have extended over a period of 3 years. Robert Bruce will remain in charge of the national headquarters touring information bureau, which will be greatly amplified in the near future.

Reports from various states indicating the progress therein of the motoring movement, were presented by these directors: John Bancroft, Delaware; F. E. Edwards, Illinois; Dr. H. M. Rowe, Maryland; A. D. Converse, Massachusetts; Edwin S. George, Michigan; Colonel F. M. Joyce, Minnesota; J. H. Edwards, New Jersey; F. G. Webb, New York; H. L. Vail, Ohio; Paul C. Wolff, Pennsylvania; John N. Brooks, Connecticut; Sam P. Atkinson, Virginia; M. C. Moore, Wisconsin; S. S. Ballard, Vermont.

In placing the association the more emphatically on record concerning violations of a state's law by visiting motorists, Dr. H. M. Rowe, of Maryland, offered a resolution, which was unanimously adopted, calling upon the officers of states issuing registration licences to notify the executive officers of the A. A. A. of such offenses so that the association could take action through its various state bodies.

Federal aid in the construction of highways, while working at the same time for state roads improvement, was embodied in the passage of this resolution:

Resolved, That this association emphatically endorse the principle of federal aid in the construction of highway, and that it further endorse and urge upon each of the several states the permanent appointment of a commissioner or commissioners and the adoption of desirable highway laws and proper provisions for making the same effective.

While the professional element figures mostly in spectacular high-speed competition, there has been marked indication recently that private owners may be induced to participate in amateur events under the proposed new definition barring from the class the driver whose trade affiliations give an advantage over the man who competes for the sport itself. Hence came the following resolution, offered by Chairman S. M. Butler of the contest board:

Resolved, That the contest board call upon A. A. A. clubs to encourage amateur competition by interesting their members in various forms of contests on road or track, or on courses properly prepared for such contests.

The retiring president, Mr. Speare, received a standing vote of thanks and a committee was appointed to select a memento of his notable occupancy of the association's highest office. In connection with forthcoming annual meetings it was voted that a banquet should be held, and the president was empowered to appoint a committee to take charge of the affair.

Coming Motor Events

December 3-18—Annual salon of Automobile Club of France.

December 25-26—Motordrome meet, Los Angeles, Calif.

December 31-January 7—American Motor Car Manufacturers' Exhibit Association show, Grand Central Palace, New York.

January 7-21—Eleventh national show at Madison Square garden, New York, under the auspices of the Association of Licensed Automobile Manufacturers, 7 East Forty-second street, New York; Merle L. Downs, secretary.

January 14-25—Annual Belgian show, Brussels.

January 14-28—Annual show of Philadelphia Automobile Dealers' Association.

January 16-21—Tenth annual show of Detroit Automobile Dealers' Association, Wayne pavilion, Detroit, Mich.

January 16-21—Show at Milwaukee, Wis., under auspices of the Milwaukee Automobile Dealers' Association.

January 25-28—First show in St. Paul, Minn.

January 28-February 4—Annual Chicago show of N. A. A. M., pleasure cars.

Feb. 5-11—Annual show in Buffalo, promoted by Automobile Trade Association.

February 6-11—Annual Chicago show of N. A. A. M., commercial cars.

February 13-18—Show in St. Louis, Mo.

February 13-18—Show at Washington, D. C.

February 14-19—Annual Show of Motor Car Trade Association, Kansas City, Mo.

LINEUP OF TRUCKS IN COMMERCIAL VEHICLE CONTEST AT OAKLAND

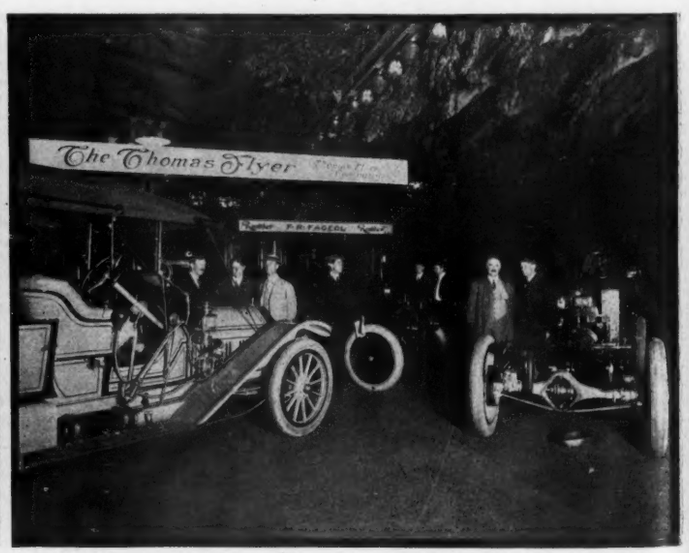
Artistic Show Is Held at Oakland

SAN FRANCISCO, Cal., Nov. 29—In a forest of evergreens the Oakland Automobile Dealers' Association last week held probably the most artistic as well as one of the most successful shows that ever took place in the west. The exhibition was held in the great oval skating rink at Idora park in Oakland, which for the occasion had been transformed into a veritable wilderness of evergreen. Fourteen thousand young redwood trees were brought from the Santa Cruz mountains and placed in and around the rink. The rink was inclosed with walls of canvas and the evergreens placed at random along the walls and aisles converted the big room into a bower of green. To compensate for the dark green of the decorations incandescent and arc lights were scattered in profusion through the building, while in the headlights of many of the cars small incandescent lights gleamed during every evening of the exhibition.

The show contained about 175 cars representing practically every manufacturer doing business on the coast. The cash value of the cars placed on the floor was a trifle over $250,000. The machines displayed ranged from the baby runabout selling for $450 to the $8,000 limousine and the giant 5-ton motor truck. Some of the makers had in their exhibits practically every type of cars, while others confined themselves to single classes of vehicles. The attendance at the show, which was opened on Saturday evening, November 19, with the discharge of a large aerial bomb, was heavy during the entire week, in spite of the fact that two days were marred by unpleasant weather.

The management of the show was wise in adding as features two endurance runs which aroused general interest on both sides of the bay. The first was a 48-hour contest which opened the moment the show began. The other was the most remarkable test of motor trucks ever seen in the west. The 48-hour run was open to all cars and was held over the 15-mile San Leandro course. There were eleven entrants, of which but two, Mitchell and Velie, secured perfect scores. The Corbin, Winton and White escaped with only minor penalties, while the Reo was withdrawn; the Maxwell, Buick, Ford, Moon and Cartercar finished in the order named. Although it did not secure a perfect score, probably the showing made by the Winton was the most remarkable of any of the cars. After the termination of the endurance run, the motor of the Winton, which was started when the bomb opening the exhibition was discharged, was kept running, and for 5 days more, day and night, the six-cylinder throbbed away at the same speed they had run during the contest.

The motor truck contest was held under the supervision of United States army officers. It was the first contest of the kind ever held in this part of the country and aroused great interest among army officers,



ALCO AND THOMAS FLYER EXHIBITS AT THE OAKLAND SHOW

CONTESTANTS IN MOTOR TRUCK CONTEST AT OAKLAND

Motor Truck Contest Is a Feature

business men, as well as among those of the motor trade. The conditions were severe, as the cars were required to carry their full scheduled load of dead weight from San Francisco to Oakland around the southern arm of San Francisco bay, an even 100 miles. They were allowed 8 hours 15 minutes in which to make the trip and were required to maintain an average speed of 12½ miles an hour. Accompanying each car was a representative of the regular army who kept an official record of the amount of gasoline and oil consumed and made notes of all details of the trip. All the cars completed the circuit and five reached Oakland with perfect scores. The Cartercar, which did not make a perfect score, covered the distance in 1½ hours less than the time allowed and was penalized for arriving ahead of time. The cars that made perfect scores with the cost per ton-mile for the 100-mile trip were as follows: Gramm, 1.23; Frayer-Miller, 1.36; Autocar, 1.46; White, 1.53; Hart-Kraft, 6 cents. The other cars in the contest, all of which made almost perfect scores, were the Avery, Rapid, Brush and Cartercar.

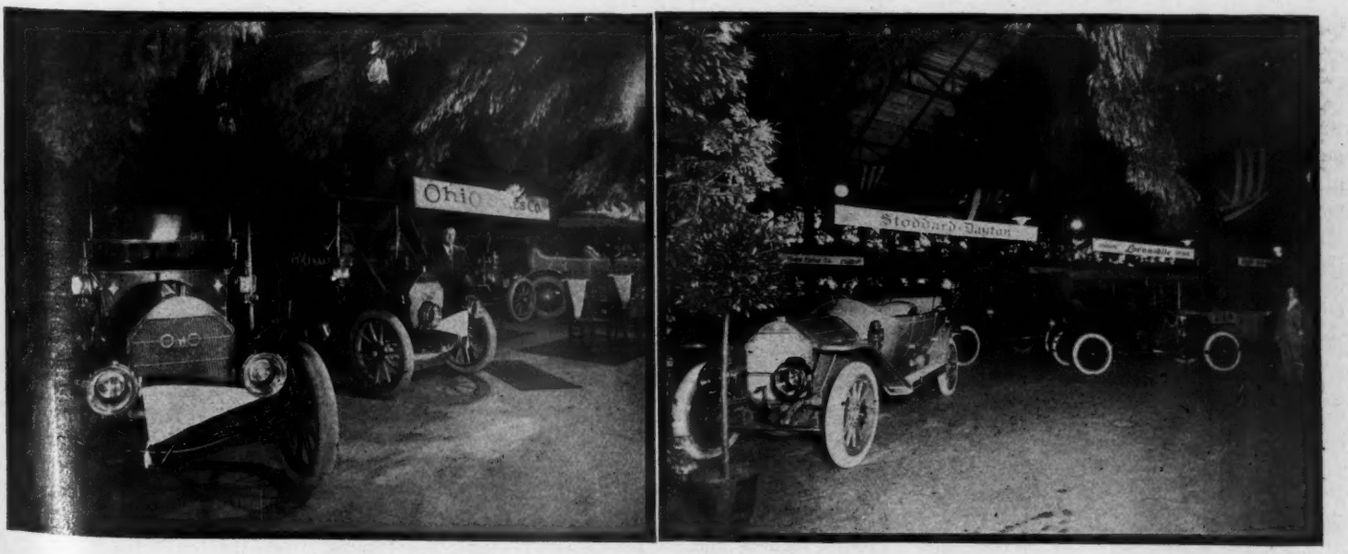
Although the gasoline cars naturally occupied most of the space and received the most attention at the show, the electrics came in for considerable notice, particularly among the women, who comprised more than the usual percentage of visitors. One of the features of the show was the display of stripped and polished chassis.

The exhibitors of stripped cars demonstrated that these polished chassis were not for display only as any intending purchaser was given the privilege of buying the cars for delivery at the conclusion of the show. One of the unusual facts in connection with the Oakland show was the large number of purchasers among the visitors. From many of the country towns in the northern part of the state came enthusiasts seeking cars, and they certainly had a splendid opportunity for a selection. Among the dealers handling moderate-priced cars the sales were particularly good. So the dealers and agents were more than satisfied with their week at the show.

From the opening night society gave its attention to the motor car. Mayor Frank Mott of Oakland, who took an active part in the opening ceremonies, and the city administration did all in its power to assist the exhibition. On the nights set apart for society the lists of attendance read like a bluebook or social register of the city about the bay.

Among the interesting features of the display were collections of trophies won by the various cars, the value of some of these cups running into thousands of dollars. Conspicuous in the center of the hall in front of the main entrance was the famous Vanderbilt cup.

Among the big exhibitors at the show was the Pioneer Automobile Co., in whose



BOOTHS OF OHIO AND STODDARD-DAYTON CARS AT THE OAKLAND SHOW

booth the models of the Lozier, Chalmers and Hudson were found. The exhibit ranged from the little Hudson roadster to the big Lozier torpedo, probably one of the handsomest cars ever shown here. The Hudson touring car was on display for the first time and the new Chalmers 30 and 40 attracted much attention.

The exhibit of the Winton Motor Carriage Co. of course consisted of sixes only, although there were various types of bodies among the cars shown. The new Winton pony tonneau with its attractive lines was notable in this section.

In the center of the hall was the exhibit of the Stoddard-Dayton Motor Co., one of the largest and most elaborate at the show. While there were eight models of this car in the exhibit, ranging from a 30 roadster to a 50-horsepower limousine, and one that attracted the most attention was the five-passenger touring car, which was recently placed on the San Francisco market at an attractive price. The 40-horsepower torpedo model also found many admirers.

The H. O. Harrison Co. used 2000 feet of floor space for the display of the Peerless and Everitt cars. Representing as it does almost opposite types of cars, the Peerless and Everitt attracted much interest. The Peerless particularly showed an attractive variety of body styles.

The largest area of floor space of any exhibit at the show was taken for the use of the Rambler. This exhibit occupied a corner within 40 feet of the main entrance of the building and it contained practically all the types of cars manufactured by the Jeffery company. The dazzling headlights of these cars attracted attention the instant a visitor entered the rink.

The Mitchell exhibited besides the standard four-cylinder five-passenger touring cars a complete line of the larger cars, including a six-cylinder close-coupled touring car.

The Franklin exhibit attracted much attention because of the new type of hood and radiator used on this year's cars. An attractive feature of this exhibit was a detached motor which made possible a complete inspection of the entire driving mechanism and air-cooling system of the car.

The Studebaker company displayed a complete line of E-M-F, Studebaker and Flanders cars. Among the other exhibits particularly worthy of mention were those of the Locomobile with its powerful new six-cylinder model, the Elmore two-cycle, the little Hupmobile, both roadster and touring car; the Pope-Hartford four-cylinder model, the Haynes, Ohio, Baker electric, the Regal, the Maxwell and Columbia, the Corbin, the Knox and the Ford and Velie.

One of the most complete displays was that of the Thomas, which is now in the hands of new people here. Six cars were shown, including a seven-passenger foredoor of standard type, and a big 6-40 flyabout in pearl gray. A stripped chassis with the motor in operation on the high gear was one of the features of this display. There were the usual exhibits of magnetos an dother accessories.

Peoria Holds Its First Motor Show

PEORIA, Ill., Dec. 5—The Peoria show, which has just closed after a successful 3 days' success, marks an epoch in the history of the business in Peoria. It has proven to the satisfaction of the most skeptical that Peoria occupies an important place in the realms of motordom and that the car is a very important factor in Peoria business life.

Originating in the fertile brain of R. E. Lawrence, Peoria's veteran enthusiast, and largely financed and managed by his able hand, the show has been made a marked success, never equaled by anything in the west in a town of this size. Mr. Lawrence did not receive a penny for his share of the receipts, but very generously gave his entire share to the Automobile Dealers' Association, which just recently sprang into existence. The purpose of this organization is to further the interests of the trade in this city, gathering the various dealers together at stated intervals and talking over the local trade situation.

There were more than 150 cars on the floor of the Coliseum on the opening day of the exhibition and many more came in on the morning of the second day. This is an excellent showing and never has been equaled in a city of this size. Many exhibitors who have no established agencies here took advantage of the opportunity thus afforded to appoint agents.

There are in Peoria more than thirty dealers selling over 100 different makes of cars, and this factor alone is a very important one in the business life of the city.

The paid admissions on the second day of the exhibition numbered over 5,000, which sets a record of attendance in a town of only 70,000 inhabitants.

The actual labor of boosting the attendance, apportioning the places to the various dealers and attending to the advertising and general business management was carried out by A. H. Whigam.

Whigam has completed arrangements for a show to be held in Springfield during the Christmas holidays.

Following is the list of the cars that were represented in the show. In many cases several different types of the same make were displayed, so that the exhibition was a very full one:

Gasoline Pleasure Vehicles—Alco, Apperson, Autocar, Black Crow, Buick, Cadillac, Case, Chalmers, Corbin, Columbus, Crawford, Cunningham, Columbia, E-M-F, Empire, Everitt, Flanders, Ford, Franklin, Great Western, Haynes, Hudson, Hupmobile, Imperial, Interstate, International, Kissel-Kar, Krit, Knox, Jackson, Locomobile, Lozier, Marmon, Matheson, Marion, McFarlan, Maxwell, Mercer, Michigan, Mitchell, Moon, Oakland, Ohio, Oldsmobile, Overland, Palmer-Singer, Peerless, Pope-Hartford, Regal, Rambler, Stoddard-Dayton, Studebaker, Thomas Flyer, Winton, Velie.

Commercial Trucks—Alco, Autocar, Buick, Babb-Carter, Frayer-Miller, Gramm, Grabowsky, Hart-Kraft.

Electric Pleasure Cars—Babcock, Baker, Columbus, Detroit, Firestone, Ideal, Rauch & Lang, Woods.

The results of the motor truck endurance run in detail were as follows:

Name of Truck and H. P.	Road score	Gasoline used in gal., at 20c	Oil used in quarts, at 15c	Actual cost per 100 miles	Cost per ton mile
Avery, 50	.956	21	1	$4.35	.01.45
Autocar, 20	1.000	9¾	1⅜	2.19	.01.46
Hart-Kraft, 16	1.000	12	4	3.00	.06.00
White, 20	1.000	10	2	2.30	.01.53
Gramm, 45	1.000	17	2	3.70	.01.23
Cartercar, 24	.993	10	2½	2.38	.04.76
Frayer-Miller, 36	1.000	11¾	2½	2.73	.01.36
Brush, 10	.987	4¼	1	.95	.03.16
Rapid, 45	.893	20	9	3.35	.01.78

The Avery car was penalized 10 points for fan repairs, 14 points for taking on water out of control and 17 points for being 17 minutes late. The Cartercar was penalized 7 points for finishing ahead of the scheduled time, while the Brush lost 3 points for taking on water out of control and 10 points for being late at the final control owing to a misunderstanding as to where to check in. The Rapid had the hardest time of the day. Before out of the San Francisco city limits it slipped off a car track into an excavation, causing it a long delay. It was penalized 107 points for lateness at controls, 20 points for carbureter trouble and 12 points for taking on water out of control.

CHANGE IN INSURANCE RATES

Boston, Mass., Dec. 2—The Boston insurance companies have made some radical changes in motor car insurance rates, and, briefly stated, they are a big reduction on high-priced motor cars insured for approximately their full value and an increase on low-priced cars insured for about their full value, too. For small amounts of insurance the rates are increased and on second-hand cars also. Dealers' insurance on second-hand cars is considerably higher than before. Upon 1910 and 1911 models costing from $3,500 upward insurance cannot henceforth be on less than 50 percent of list price. If insured for the minimum the rate is $2.75 per $1,000 and for the maximum it is $2.25. Cars costing from $1,500 to $3,499, of 1910 and 1911 models, cannot be insured for less than 50 percent of the original price; 1909 models cannot be insured for more than 80 percent, nor 1908 models for more than 60 percent. For cars costing up to $1,499 the same requirements as to the minimum insurance holds good on 1910 and 1911 models. In 1909 models the maximum is 70 percent, on 1908 50 percent and on 1907 models there is an extra charge, except on cars costing $3,500 or more originally, the maximum amount on 1907 models being limited to 40 percent. Cars older than 1907 are accepted only at an advance. In the case of private garage warranty there is a reduction of one-quarter from the schedule rate. For electrics the rate is decreased from $2.50 to $2, with a reduction of one-quarter on the whole for private garage warranty.

Taft Told About Road Improvement

WASHINGTON, D. C., Dec. 5—"By reason of a rather remarkable combination of conditions the immediate present may be considered the most important period in the history of road improvement in the United States," says Secretary of Agriculture Wilson in his annual report to President Taft. "The old systems of road administration, involving the principle of extreme localization, are fast breaking up, and new systems, involving the principle of centralization, are taking their place. Road administration therefore is in a transitional or formative stage, and it is of the utmost importance that the movement be directed along right lines.

"It is a curious coincidence that the introduction of the motor vehicle at about the time when these changes in administration began has brought about traffic conditions which have necessitated an equally radical departure from old methods of construction and maintenance. It will thus be seen that the entire subject of road improvement, involving administration, construction and maintenance, is passing through an exceedingly important period, in which the educational and scientific work of this branch of the government service should prove of the greatest value.

"During the past year the office of public roads has continued giving instruction in the methods of road building peculiarly adapted to each locality. This instruction has been given through the medium of object-lesson roads, built at local expense, under the supervision of an engineer from the office. The advisory work of the office during the year covered a wide field, relating to construction of various types of roads, surveys, use of convicts in roadwork, bridge construction, maintenance, use of the split-log drag, road materials, effect of motor vehicles on roads, the issuance of bonds for road improvement, the drainage of roads and other work along similar lines.

"The office is assembling reliable data as to the progress of road improvement in the United States and the relation of roads to agriculture. Through an organization composed of special agents in all parts of the United States the office soon will be in a position to receive prompt reports of progress along all lines. This information will be disseminated in such a way that the work in the various states can be correlated and co-ordinated as to minimize the duplication which is now so much in evidence. In the routine testing and examination of road materials great progress has been made along established lines.

"The need for better culverts and bridges for our public highways is becoming evident both from the point of economy and safety for the public. Information on this subject in suitable form has been in the past, and still remains, fragmentary and scattered. Detailed information on this subject is now being collected.

"During the past year the work of the office relative to the investigation of the problems of dust prevention and road preservation has advanced rapidly. Routine tests or analyses of bituminous road materials made in the laboratories during the past year were more than double the number made during the preceding year. A number of these examinations were made in conjunction with the experimental field work of the office. Through its laboratory work the office has been able to offer valuable advice in regard to specifications for bituminous road binders, and in many instances to frame such specifications upon request of various public service bodies. A number of the state highway commissions have profited by this opportunity."

HORSE AGAIN BEATEN

Omaha, Neb., Dec. 5—The T. G. Northwall Implement Co. of Omaha, agent for the Brush car for Nebraska, has completed a 2 weeks' test between a runabout and a horse and buggy, which clearly demonstrates the advantages of a motor car over the horse-drawn vehicle. The Brush runabout in the 2 weeks traveled three and one-quarter times as far, in four-fifths the time, and the operating expense was less than that of the horse and buggy. The two started out together to make a certain fixed schedule, visiting various points about the city. The running time for the motor car was 41 hours 40 minutes. It covered 668 miles, consuming 19¼ gallons of gasoline and 4 pints of lubricating oil. The net cost was $3.21¾. This is a trifle less than ½ cent per passenger mile for the motor car. The horse and buggy traveled 53 hours 23 minutes, covering 205.3 miles. During that time the horse consumed 200 pounds of hay and 5 bushels of oats, not including his feed on Thanksgiving day or either of the two Sundays, which should rightly be included. The expense of keeping the horse was $3.70. This is 1.8 cents per passenger mile.

MASSACHUSETTS CENSUS

Boston, Mass., Dec. 2—The Massachusetts highway commission is now sending out notifications to motorists who have numbers up to 5000 that the 1911 sets are being made ready and if they wish their old numbers to notify the commission at once. In this way it hopes to get a lot of the registrations through early enough so as not to be swamped when the annual rush begins once more. Blank applications for the renewal of operators' licenses also are being sent out. The figures just compiled show that the commission has received from motorists' fees and fines this year $386,547.78, an increase of $228,357.78 over last year, due to rating the cars according to horsepower. There were 31,313 cars registered this year, while last year the total was 23,905, an increase of 30 percent. The registration and licensing statistics for 1910 make interesting reading. They are as follows:

Motor car registration certificates —			
1,611	at	$ 2.00	$ 3,222.00
420	at	2.50	1,050.00
15	at	4.50	67.50
9,864	at	5.00	49,320.00
793	at	7.00	5,551.00
378	at	7.50	2,835.00
11,014	at	10.00	110,140.00
184	at	12.00	2,208.00
67	at	12.50	837.50
4,126	at	15.00	61,890.00
19	at	17.00	323.00
2,433	at	20.00	48,660.00
1	at	22.00	22.00
388	at	25.00	9,700.00
Motor Cycles Registration Certificates—			
3,132	at	$2.00	6,264.00
224	at	1.00	224.00
Mfrs. and Reg. Certificates—			
633	at	$25.00	15,825.00
16	at	12.50	200.00
Licenses—			
9,443	operators at $2		18,886.00
3,776	chauffeurs at $2		7,552.00
19,161	operators renewal at 50c		9,580.50
8,869	chaffeurs renewal at 50c		4,434.50
Total income from fees			$358,792.00
Total fines			27,755.78
Total income			$386,547.78

The condensed figures for 1909 are as follows:

Registration certificates—		
23,905	for motor cars at $5	$119,525.00
2,376	for motor cycles at $2	4,752.00
490	for dealers at $15	7,350.00
8,336	for licenses for operators at $2	16,672.00
3,289	for chauffeurs at $2	6,578.00
6,626	for chauffeurs (renewals) at 50c	3,313.00
Total income		$158,190.00

The income from fines this year is not as large as was expected and indicates that the change in the law requiring that the fines paid by motorists be sent to the state treasurer for the use of the highway commission on roads, instead of to the towns is working out as the motorists hoped it would; that is, it has discouraged the enforcement of the speed law for purposes of revenue only.

LAUDS DR. GOODRICH'S MEMORY

Akron, O., Dec. 5—Incidental to his address on "Rubber" before the convention of the Ohio Academy of Science in this city, President F. A. Seiberling of the Goodyear Tire and Rubber Co. paved the way for a movement for the erection of a monument to the late Dr. B. F. Goodrich, who founded the rubber industry in Akron. In reply to a question from one of the scientists as to why Akron became the rubber center of the world, Seiberling replied as follows:

"It was due to the efforts of Dr. Goodrich. He came into the city and struggled for 3 years, and in the panic year of 1873 was on the verge of bankruptcy, but several men came to his assistance, among whom was the donor of the hall in which you now are sitting. After the first factory was a success others were started and skilled labor from one factory to the other was transferred. Today we have $50,000,000 capitalization, manufacture $75,000,000 worth of marketable product and give employment to 15,000 men. Some day Akron will recognize its obligation to Dr. Goodrich that will be worthy of the city and we will erect a monument in his honor that will be worthy of the city and the great work Dr. Goodrich started here."

'FRISCO SURE OF ROAD RACES IN JANUARY

SAN FRANCISCO, CAL., Dec. 7—Special telegram—Under the name of the Panama-Pacific road race in deference to San Francisco's fight to capture the Panama exposition in 1915 the oft-postponed Portola road race meet will be held over the San Leandro course on Monday, January 2, under the auspices of the Oakland Automobile Dealers' Association and the Portola Racing Association. The contest will be under the immediate management of Dick Ferris, who successfully conducted the Santa Monica road race on Thanksgiving day, and Walter B. Faweett, of Oakland. The course has been cut down to half the distance of the 1909 contest, being practically a parallelogram. The distance is 10.923 miles.

Entry blanks now are out and, according to advices received, the race will bring together many drivers of national fame. Three races are scheduled. The first event for light cars will be run in divisions. The first division will be for cars of less than 230 inches displacement and the second division will be for cars of 231 to 300 displacement. The distance will be 100 miles. The second event will be for 152 miles for cars of from 300 to 600 displacement and will prove of most important heavy-car races for the season. The third event will be a free-for-all, scheduled for 207 miles. Trophies and cash prizes will be awarded.

The course now is being put into shape by the county supervisors and arrangements are under way for patrolling it. Following the race the mechants of Oakland are planning a big carnival and confetti battle, and it is expected nearly 1,000,000 people will be attracted from the transbay counties to witness the races and festival.

AMATEUR MEET IN NEW ORLEANS

New Orleans, La., Dec. 3—Six amateur races drew 2,500 people to the fair grounds track November 27. The races were good for nonprofessional events. The first two races were novelty numbers. Driver Joubert in a Ford furnished something of a sensation by finishing ½ mile ahead of his nearest competitor in a 2-mile race. Sellers, in a Marmon, won easily from Costello in a National in the fourth race. The 5-mile speed event, principal number of the card, was fifth. Walker's Marquette-Buick won the first heat, and Speer's Jackson the second. Monteleone's Thomas ran the best second and he was admitted in the final. The final was won by Speer, with Walker second and Monteleone a good distance back. Summary:

One-quarter mile slow race for four-cylinder cars; operators keeping in high speed, but slipping clutches as they pleased—Benzie, Jackson, won; Shaw, Cartercar, second. Time, 8:21⅘. Ford and Maxwell also started.

One-quarter mile slow race; free-for-all; operators keeping in high speed but not slipping clutch—Powell, White steamer, won; time, 12:07. Munson, Thomas, won in the six-cylinder class.

Two miles, for cars under 25 horsepower—Joubert, Ford, won; Tuttle, Overland, second. Time, 2:30⅘. C. W. Murphy's Ford, Dr. Landry's Oakland and Schwartz's Buick 10 started.

Special match race; 1 mile; equipped cars—Sellers, Marmon, won; Costello, National, second. Time, 1:25⅘.

Five miles, speed event, run in heats. First heat—Walker, Marquette-Buick, won; time, 5:47⅕. Second heat—Speer, Jackson, won; time, 5:35. Final—Speer, Jackson, won; Walker, Marquette-Buick, second; time, 5:30.

Five miles in 10 minutes, run in heats—Grabat, Great Western, won; time 10:00⅘. Marmon, National, Jackson, White steamer, Thomas six, Buick, Thomas six and Ford started.

Thirty-minute race—Walker, Marquette-Buick, won; distance, 26¾ miles; Speer, Jackson, second; distance, 25⅝ miles; Monteleone, Thomas, third; distance, 24½ miles. Marion and Overland also ran.

NEW TRADE BODY PROPOSED

New York, Dec. 5—The National Association of Motor Car Manufacturers, supported by independent makers, will be permanently organized during the coming week, it is announced by the publicity bureau of the palace show. A temporary organization was effected at the Belmont hotel in November. No announcement was made at that time because details were not then perfected. Part of the plan is to take over the management of the palace motor car exposition as well as to foster independent trade bodies, and run other shows in the larger cities for the benefit of local independent dealers.

CHICAGO MOTOR CLUB ELECTION

Chicago, Dec. 7—The annual election of the Chicago Motor Club, which was held last night, brought out 249 of the club's 500 members and resulted in the retention of the 1910 board almost to a man. The election was warmly contested, David Beecroft leading the administration forces, while Charles P. Root, chairman of the contest board, headed the other ticket. The result of the balloting was as follows: President, David Beecroft; first vice-president, Thomas J. Hay; second vice-president, Henry Paulman; secretary, Norton H. Van Sicklen, Jr.; treasurer, Charles E. Gregory; directors: John H. Kelly, F. E. Edwards, W. J. Zucker, C. G. Sinsabaugh and J. P. Frisby; auditing committee: Louis Geyler, L. L. Halle and L. R. Campbell. There was a difference of fifty-nine votes between the heads of the two tickets.

The annual reports showed the club to be in a flourishing condition, with more than 500 members, $6,000 in the treasury and no indebtedness. Having been assured that it can have the national stock chassis road races in 1911, the club now is making its plans for next season.

PARRY IN RECEIVER'S HANDS

Indianapolis, Ind., Dec. 5—Under proceedings agreed to by the directors of the concern, the Parry Automobile Co. Saturday afternoon went into the hands of a receiver. The superior court has appointed the Union Trust Co. receiver and in all probability the business will be continued. The petition for receiver was filed by the Webster & Perks Tool Co., one of the creditors, on a bill of $327.15. Attorneys for the Parry company filed an answer as soon as the receivership proceedings were filed, admitting the account and that it is also otherwise indebted.

No charges of mismanagement in the company's affairs are made. It has an authorized capitalization of $1,000,000, but of this only about $150,000 has been paid in. The trouble is due to the lack of working capital, as the company has orders amounting to $3,300,000 on its books for 1911 delivery. Experimenting, heavy advertising and the cost of machinery, caused the company to operate at a loss during the first year of its existence.

The receiver will ask permission to continue the business, and later it is probable a new company will be organized to take the business out of the receiver's hands. The company sold about 900 cars this year.

ANOTHER TRUCK ASSOCIATION

Boston, Mass., Dec. 3—The motor truck situation in Boston was somewhat complicated during the week by the formation of the New England Motor Truck Association. This makes two organizations, the Boston Truck Dealers' Association having been formed a few weeks ago. Some of the dealers evidently thought the Boston association was too closely allied with the regular Boston Automobile Dealers' Association, which holds the pleasure-car shows each year, so they decided to call another meeting and form the second association. The newer association got busy and elected officers and then invited all those who handle motor trucks to join the association. A few days later the Boston Truck Dealers' Association met and discussed the situation and this was followed by a private conference at which members of both associations talked matters over. There is to be another meeting in a few days and it is expected that a compromise may be reached. The New England association is in favor of having a motor show this spring, while the members of the Boston association feel that the commercial exhibit at the Boston show will suffice for the time being. Those who attended the New England association meeting were Frank S. Corlew, Wilcox; Alvan T. Fuller, Packard; O. W. Lawton, Franklin; E. P. Blake, McIntyre; C. A. Malley, Studebaker; F. W. Blackmer, Gramm; Day Baker, General Vehicle Co.; H. L. Exstein, Grabowsky; F. R. Robbins, Atterbury; Alfred Morse, Hartford; H. M. Doane, Warren-Detroit; A. B. Cumner, Autocar; Mr. Pierson, White; G. P. Bennett, Frayer-Miller; Paul Curtis, Victor; Mr. Harrison, Harrison, and Mr. Woods, Garford. After threshing the matter out for some hours it was decided to incorporate the organization and leave it open to any dealer in New England. An invitation has been extended to the other truck dealers to come into the fold.

EXHIBITORS IN FIRST WEEK OF GARDEN SHOW

NEW YORK, Dec. 6—With every foot of space available for exhibition purposes taken, although there are 100,000 square feet, which is 22,600 square feet more than at the last show, the Part 1 period of the eleventh national show will open January 7 with a grand total of 387 exhibitors. Of these, sixty-seven will be exhibits of complete cars, while 320 are accessories and parts exhibits. The standard makes of licensed cars will be mostly on the main floor, but there will be car exhibits also on the elevated platform, balcony and in the exhibition hall. Accessories and parts will be shown on the elevated platform, balcony, concert hall, second tier and room 7, and in the basement. The list of exhibitors for the Part 2 period, January 16 to 21, has not been issued as yet. During this Part 2 period will be shown commercial vehicles, motor cycles, electric pleasure vehicles and accessories. The list of exhibitors, with the numbers of their spaces, follows:

MAIN FLOOR

1 F. B. Stearns Co.
2 E. R. Thomas Motor Co.
3 Olds Motor Works.
4 H. H. Franklin Mfg. Co.
5 Dayton Motor Car Co.
6 Oakland Motor Car Co.
7 Lozier Motor Co.
8 Elmore Mfg. Co.
9 Winton Motor Car Co.
10 Locomobile Co. of America.
11 Hudson Motor Car Co.
12 Mitchell-Lewis Motor Co.
13 Stevens-Duryea Co.
14 Packard Motor Car Co.
15 Buick Motor Co.
16 Cadillac Motor Car Co.
17 Willys-Overland Co.
18 Reo Motor Car Co.
19 Peerless Motor Car Co.
20 Pierce-Arrow Motor Car Co.
21 Chalmers Motor Co.
22 Maxwell-Briscoe Motor Co.
23 E-M-F. Co.

EXHIBITION HALL

50 Daimler Import Co.
51 Mercer Automobile Co.
52 Moon Motor Car Co.
53 Simplex Motor Car Co.
54 Corbin Motor Vehicle Corp.
55 Nordyke & Marmon Co.

ELEVATED PLATFORM

101 Knox Automobile Co.
102 American Motor Car Co.
103 Matheson Motor Car Co.
104 National Motor Veh. Co.
105 Selden Motor Veh. Co.
106 Buckeye Mfg. Co.
107 Moline Automobile Co.
108 Premier Motor Mfg. Co.
109 Pullman Motor Car Co.
110 Pope Mfg. Co.
111 Jackson Automobile Co.
112 Brush Runabout Co.
113 Hotchkiss Import Co.
114 Haynes Automobile Co.
115 Royal Tourist Car Co.
116 Metzger Motor Car Co.
117 Autocar Company.
118 Columbia Motor Car Co.
119 American Locomotive Co.
120 Garford Co.
121 Waltham Mfg. Co.

ELEVATED PLATFORM

122 Goodyear Tire and Rubber Co.
123 Whitney Mfg. Co.
124 Veeder Mfg. Co.
125 Hartford Rubber Wks. Co.
126 Badger Brass Mfg. Co.
127 B. F. Goodrich Co.
128 Diamond Rubber Co.
129 C. F. Splitdorf.
130 Gray & Davis.
131 G & J Tire Co.
132 Morgan & Wright.
133 National Carbon Co.
134 Light Mfg. and Foundry Co.
135 Baldwin Chain and Mfg. Co.
136 Phineas Jones & Co.
137 A. O. Smith Co.
138 National Tube Co.
139 Diamond Chain and Mfg. Co.
140 Jones Speedometer Co.
141 N. Y. & N. J. Lubricants Co.
142 C. A. Mezger, Inc.
143 Weed Chain Tire Grip Co.
144 Continental Rubber Wks.
145 Wheeler & Schebler.
146 Pennsylvania Rubber Co.
147 Remy Electric Co.
148 Consolidated Rubber Tire Co.
149 Randall-Faichney Co.
150 United States Light and Heating Co.
151 Republic Rubber Co.
152 Conn. Tel. and Elec. Co.
153 Chandler Co.
154 Columbia Nut and Bolt Co.
155 Coes Wrench Co.
156 Hartford Suspension Co.
157 Edmunds & Jones Mfg. Co.
157A Adam Cooks Sons.
158 Morrison-Ricker Mfg. Co.
159 J. H. Lehman Mfg. Co.
161 Charles E. Miller.
162 A. W. Harris Oil Co.
163 Standard Roller Bearing Co.
164 Firestone Tire and Rubber Co.
165 Oliver Mfg. Co.
166 Timken Roller Bearing Co.
167 Timken-Detroit Axle Co.
168 Pittsfield Spark Coil Co.
169 Spicer Mfg. Co.
170 Brown-Lipe Gear Co.
171 Swinehart Tire and Rubber Co.
172 Warner Instrument Co.
173 J. H. Williams & Co.
174 Kokomo Electric Co.
175 Warner Gear Co.
176 Standard Welding Co.
177 American Ball-Bearing Co.
178 Fisk Rubber Co.
179 A. R. Mosler & Co.
180 Gabriel Horn Mfg. Co.
181 Castle Lamp Co.
182 Joseph Dixon Crucible Co.
183 Valentine & Co.
184 Heinze Electric Co.
185 Vacuum Oil Co.
186 Briscoe Mfg. Co.
187 Wm. Cramp & Sons.
189 R. E. Dietz Co.
190 Herz & Co.
191 S. F. Bowser & Co.
192 Pantasote Co.
193 Springfield Metal Body Co.

BALCONY

201 Inter-State Automobile Co.
202 Ohio Motor Car Co.
203 Palmer & Singer Mfg. Co.
204 Kissel Motor Car Co.
205 Hupp Motor Car Co.
206 Chadwick Engineering Wks.
207 Speedwell Motor Car Co.
208 Regal Motor Car Co.
209 W. H. McIntyre Co.
210 Marquette Motor Co.
212 Pierce Motor Co.
213 Flandrau Motor Car Co.
215 Midland Motor Co.
217 Courier Car Co.
218 Simplex Automobile Co.
219 Atlas Motor Car Co.
221 Cartercar Co.

BALCONY

222 Ajax-Grieb Rubber Co.
223 Columbia Lubricants Co.
224 Bosch Magneto Co.
225 Michelin Tire Co.
226 Lovell-McConnell Mfg. Co.
227 Elect. Storage Battery Co.
228 Continental Caoutchouc Co.
229 Eisemann Magneto Co.
230 Stewart & Clark Mfg. Co.
231 Empire Tire Co.
232 Thermoid Rubber Co.
233 Vesta Accumulator Co.
234 New Departure Mfg. Co.
235 Link-Belt Company.
236 Hoffecker Co.
237 Lebanon Steel Casting Co.
239 Apple Electric Co.
240 Turner Brass Wks.
241 Auto Improvement Co.
242 American Ever Ready Co.
243 Stromberg Motor Devices Co.
244 Muncie Gear Works.
245 Gemmer Mfg. Co.
246 Excelsior Motor and Mfg. Co.
247 Warner Mfg. Co.
248 Metz Clincher Tire and Rubber Co.
249 Miller Rubber Co.
250 Livingston Radiator and Mfg. Co.
251 Star Rubber Co.
252 Royal Equipment Co.
253 Driggs-Seabury Ordnance Corp.
254 Cleveland Speed Indicator Co.
255 H. W. Johns-Manville Co.
256 Stein Double Cushion Tire Co.
257 Edison Storage Battery Co.
258 J. Ellwood Lee Co.
259 Cooks Standard Tool Co.
260 George A. Haws.
261 Homo Co. of America.
262 E. B. Van Wagner Mfg. Co.
263 Seamless Rubber Co.
264 R. E. Hardy Co.
265 L. C. Chase & Co.
266 National Coil Co.
267 J. H. Sager Co.
268 Auburn Auto Pump Co.
269 Briggs & Stratton Co.
270 C. A. Shaler Co.
271 C. Cowles & Co.
272 Gilbert Mfg. Co.
273 Noera Mfg. Co.
274 Globe Machine and Stamping Co.
275 Leather Tire Goods Co.
276 Carpenter Steel Co.
277 Witherbee Igniter Co.
278 Batavia Rubber Co.
279 Manufacturers Foundry Co.
281 Atwater Kent Mfg. Wks.
282 McCue Co.
283 Parker Motor Co.
284 Muncie Wheel Co.
285 Crucible Steel Co. of America.
286 Standard Thermometer Co.
287 Isaac G. Johnson & Co.
288 Russell Motor Axle Co.
291 Briggs Mfg. Co.
292 Stevens Mfg. Co.
293 Orlando W. Young.
294 Kellogg Mfg. Co.
295 Newark Rivet Works.

CONCERT HALL

301 Sprague Umbrella Co.
302 Hayes Mfg. Co.
303 Havoline Oil Co.
304 Hess-Bright Mfg. Co.
305 Rands Mfg. Co.
307 Marburg Brothers.
308 Sparks-Withington Co.
309 Frost Gear and Tool Machine Co.
310 Willard Storage Battery Co.
311 Reichenback Laboratories Co.
312 Vanadium Metals Co.
313 Dover Stamping and Mfg. Co.
314 Western Tool and Forge Co.
315 Troy Auto Specialties Co.
316 White & Bagley Co.
317 Sireno Co.
318 Atlantic Refining Co.
320 United Steel Co.
321 Vanadium Sales Co.
322 Century Rubber Trading Co.
323 Howard Demountable Rim Co.
324 North & Judd Mfg. Co.
325 McCord Mfg. Co.

SECOND TIER AND ROOM 7

400 Doehler Die-Casting Co.
401 Wright Wrench & Forging Co.
402 Motor Parts Co.
403 Penfield Shock Absorber Co.
404 Culver Stearns Mfg. Co.
405 Best Ignition Equipment Co.
406 Ashland Mfg. Co.
407 L. V. Fletcher & Co.
408 Rutherford Rubber Co.
409 A. U. Campbell.
409A F. H. Kelsey & Co.
410 H. A. Elliott.
411 Hazen-Brown Co.
412 Philadelphia Steel and Forge Co.
414 Universal Tire Protector Co.
415 International Metal Polish Co.
415A J. Alexander Mfg. Co.
415B Calmon Asbestos and Rubber Wks.
416 Broga Automatic Fastener Co.
417 Metal Stamping Co.
418 Rushmore Dynamo Works.
419 E. M. Benford.
420 C. A. Willey Co.
421 Voorhees Rubber Mfg. Co.
422 Baker Sales Co.
423 Automobile Tire Co.
424 Randolph & Co.
425 Motor Specialties Co.
426 Reinhold Noflux Aluminum Solder Co.

BASEMENT

500 New York Sporting Goods Co.
501 Merchant & Evans Co.
502 Newmastic Tire Co.
503 Keystone Steel Casting Co.
504 Class Journal Co.
505 Class Journal Co.
506 Electric Speedometer and Dynamometer Mfg. Co.
507 Hydraulic Oil Storage Co.
509 Kilgore Mfg. Co.
510 Garage Equipment Mfg. Co.
511 Dorian Remountable Rim Co.
512 R. M. Hollingshead Co.
513 Gieszler Brothers Storage Battery Co.
514 C. F. Ernsts Sons.
515 Wyckoff Lumber & Mfg. Co.
516 Gyrex Mfg. Co.
517 Hopewell Brothers.
518 North East Electric Co.
519 W. E. Pruden Hardware Co.
520 Stevens & Co.
521 Phila. Grease Mfg. Co.
522 Ideal Wind Shield Co.
523 Vehicle Apron & Hood Co.
524 L. Sonneborn Sons, Inc.
525 Rupert C. King.
526 Fegley Tire Chain Co.
528 H. D. Smith Co.
529 Kein Starter Co.
530 Union Auto Specialties Co.
531 G. B. Lambert.
532 Hofacker Mfg. and Supply Co.
533 Novelty Mfg. Co.
534 Bliven & Carrington, Inc.
535 Delcampe Welding Co.
537 William E. Pratt Mfg. Co.
538 Auto Wind Shield Co.
539 Fedders Mfg. Works.
540 Randerson Auto Parts Co.
541 Perfection Spring Co.
542 Detroit Motor Car Supply Co.
543 Star Starter Co.
543 A. Lefever Arms Co.
544 Wayne Oil Tank and Pump Co.
545 Joseph Tracy.
546 Ernst Flentje.
547 N. B. Arnold.
548 Troy Carriage Sun Shade Co.
549 Ajax Trunk & Sample Case Co.
550 Post & Lester Co.
552 Motor Vehicle Publishing Co.
553 Gotham Aluminum Solder Co.
553 A. Luce Mfg. Co.
554 John T. Stanley.
556 Julius King Optical Co.
557 James L. Gibney & Brother.
559 Fred Robinson.
560 H. M. S. Auto Switch Co.
562 Motor Car Equipment Co.
563 Standard Metal Work Co.
564 Peter A. Frasse & Co.
565 William P. Miller's Sons.
566 P. Rielly & Son.
567 Atlas Chain Co.
568 Nightingale Whistle Mfg. Co.
569 H. H. Franklin Mfg. Co. Die-Casting Dept.
570 Walter H. Foster Co.
571 Findeisen & Kropf Mfg. Co.
572 Brown Co.
573 Ward Leonard Electric Co.
574 New York Coil Co., Inc.
575 B. & L. Auto Lamp Co.
576 Jeffery Dewitt Co.
577 El Arco Radiator Co.
578 Meteor Gas Co. of N. Y.
579 Universal Rim Co.
580 Elite Mfg. Co.
581 K. & W. Mfg. Co.
582 C—M—B Wrench Co.
583 Hibbard Engineering Co.
584 Barthel, Daly & Miller.
585 S. Hoffnung & Co., Ltd.
586 J. S. Bretz Co.
587 Simms Magneto Co.
588 Couch & Seeley Co.
589 Nonpariel Horn Mfg. Co.
590 Lutz-Lockwood Mfg. Co.
591 U. S. McAdamite Metal Co.
592 Gus Balzer.
594 Elliott Auto-Lighter Co.
595 Harry A. Allers & Co.
597 A-Z Co.
598 Simonds Mfg. Co.
599 Thomas Prosser & Son.
600 Chilton Co.
601 International Engineering Co.
602 Charles O. Tingley & Co.
603 Frank H. Cross Distributing Co.
604 Charles J. Downing.
605 Eagle Co.
606 A. J. Myers, Inc.
607 Harrison Radiator Co.
608 Tuttle Motor Co.
609 Westen Mfg. Co.
610 Clayton Air Compressor Wks.
611 Shawmut Tire Co.
612 Keystone Lubricating Co.
613 L. J. Mutty Co.
614 S. B. R. Specialty Co.
615 R. I. V. Co.
616 B. M. Asch.
617 Sheldon Axle Co.
618 Automobile Supply Mfg. Co.
619 Star Speedometer Co.
620 Valve Seating Tool Co.
621 Polson Mfg. Co.
622 Alfred C. Stewart Machine Wks.
623 Allen Auto Specialty Co.
624 K—W Ignition Co.
625 Cox Brass Mfg. Co.
627 Champion Ignition Co.

GRAND RALLY OF CHALMERS MEN AT DETROIT

BANQUET GIVEN TO AGENTS BY THE CHALMERS MOTOR CO. AT DETROIT

DETROIT, MICH., Dec. 5—A memorable banquet in the Hotel Pontchartrain Thursday night, closed the 4-day convention of Chalmers dealers. In attendance, in enthusiasm, in its educational and entertainment features, it was one of the most successful gatherings of the kind ever held. Upwards of 150 dealers, representing every section of the country, were registered. They saw Chalmers cars made, heard every detail of construction explained, discussed advertising and sales methods from every angle, were told how the Chalmers Motor Co., from a modest beginning, had developed into one of the greatest motor car plants in the country, saw tires manufactured, and incidentally had a corking good time. The optimism that dominated the addresses of President Hugh Chalmers and others inspired confidence, and the dealers returned to their homes well satisfied with the outlook for 1911. In fact, every one of them was quite ready to predict an increase in the coming year's business over that of 1910.

Speaking at the banquet, Mr. Chalmers gave reasons for his great faith in the future of the industry. He said in part:

"My own unwavering faith in the future of the motor business is based upon the realization that the motor car, price considered or not considered, is the most helpful servant man ever has built for himself. It answers the world's demand for a means of moving from one place to another safely, quickly and economically. That which serves well prospers well. Hence I can see nothing but a bright future for the motor car. Neither can I see anything but a bright future in the business for those who conduct their affairs on the same principles that have won enduring success in other lines. Those who do not so conduct their affairs must, of course, fail, but they would fail in any other line under the same conditions. You cannot blame the business."

With reference to the company's relations to its employes, Mr. Chalmers said:

"We believe our employes are something more than machines. We desire, therefore, to treat them accordingly. We feel that there is in every honest man, no matter what his task may be, a personality, an individuality that is entitled to consideration and fair treatment. It is our aim at all times to give to our employes this consideration and fair treatment. Labor is necessary to life, but more than this, it is necessary and uplifting because it is the means by which character and ability are developed. On that account, labor of any kind should not be degraded by the conditions surrounding it. Hence we have erected good buildings—buildings that are comfortable in all seasons of the year. Our work shops are all perfectly lighted and well ventilated; they are all kept clean. We believe that one of the least things an employer can do is to provide clean and healthful environment in which those who work for him may perform their duties."

For the lighter moments, those in charge of the banquet had several unique surprises. Consternation reigned for a minute or two when, toward the end of the feast, a crowd of newsies burst into the room crying "Extree! Extree! All about the Chalmers plant burning!" At the same time they held up to view what appeared to be copies of a bona fide newspaper extra. There was a great scramble for the sheets and the guests hastily grabbed them up to read in flaring headline:

"CHALMERS PLANT ABLAZE."

Then, just underneath, in much smaller type, they found this: "With enthusiasm."

The "assassination" of President Chalmers was announced something after this fashion by this extra paper:

"CHALMERS STABBED
An Oyster."

There was no lack of variety in the musical program offered. It started with selections by a German band. A company of Scotch pipers, in kilts, and an Italian with a hand organ also helped liven things up. To top it all off, the visiting dealers presented Mr. Chalmers and his associates with a magnificent art lamp for the directors' room, while Mrs. Chalmers, wife of the president, as the helpful partner at home, was made the recipient of a solid silver service. Carl H. Page, of New York, made the presentations. Lee Counselman, of the Chalmers company, distinguished himself as toastmaster.

In opening the convention, Monday afternoon, Mr. Chalmers told how the company had backed its faith in the future of the industry by spending $1,600,000 for improvements in the past 18 months. "We have bet $1,600,000 against the future that the industry is substantial and that the Chalmers Motor Co. will be one of the concerns to keep right on doing business," he said.

A feature of the opening session was a talk on "Chalmers' Designs and Principles," by Second Vice-President George W. Dunham, who also is the consulting engineer of the company. Though of a technical nature, the address proved highly enlightening. Mr. Dunham left immediately afterwards for Paris, where he will attend the show this month. He is accompanied by Mrs. Dunham.

Mr. Counselman recounted the history of the company, as part of Monday's program, illustrating his talk with numerous slides, which showed, in a very effective manner, just what changes and improvements had been made. A trip through

the plant itself was taken Monday morning, as the first "order of business."

A visit to the Morgan & Wright plant, Wednesday, proved one of the most enjoyable features of the convention. After witnessing every process in the manufacture of tires, the dealers were entertained at luncheon, and on leaving each was presented with a handsome bill case, bearing his name and address.

The latest thing in delivery trucks is the Superior, manufactured by the Superior Motor Car Co., which established itself in the original Ford factory on Mack avenue about a year ago. After experimenting for several months, the company now is ready to place three models on the market. They are a merchants' delivery car, with a normal capacity of 1,200 pounds; a stake-body express truck and an open combination delivery car, the latter being designed especially for country roads.

Officers of the Superior Motor Co. are: President, F. N. Cooper; vice-president, Stephen A. Pratt; secretary, C. W. Dreyer; directors, George Moore, Albert Strelow, C. J. Netting, John D. Templeton, John L. Austin and the officers. Mr. Austin is the managing director. The engineering department is in charge of B. F. Wright, who, for many years, was connected with some of the best known concerns in England.

The Grabowsky Power Wagon Co. has completed three mammoth trucks for the A. L. Ammen Water and Land Transportation Co., for use on the Isle of Luzon, Philippines. They are combination freight and passenger trucks of 3-ton capacity.

Robert K. Davis, manager of the United Motor Detroit Co., is starting out one of his model Q Maxwells on a 1,000-mile endurance and reliability run today. The tour will be confined to Michigan and the car will be in charge of A. V. Davis, sales manager for the Maxwell line here. All adjustments will be sealed before the start of the trip.

Clarence H. Booth, formerly manager of E-M-F plant No. 3, has succeeded the late David Hunt, Jr., as manufacturing manager for the company. Charles Sweet, who has been assistant manufacturing manager, takes Mr. Booth's place at plant No. 3. All the company's plant were closed Monday afternoon during the funeral of Mr. Hunt. Department heads and business associates of the deceased acted as pallbearers.

CHALMERS' AGENTS IN FRONT OF FACTORY

C. V. Richardson, general manager of the Owosso Motor Co., of Owosso, Mich., since its organization, has resigned and his place has been taken by W. E. Hall. It is understood that Mr. Richardson will become identified with a Detroit plant. The Owosso company is planning to enlarge its facilities in the very near future. It manufactures a 1-ton motor truck.

Detroit motor interests are behind the Chelsea Land Co., which has just been organized in Chelsea, Mich., with a capital of $50,000. That community has experienced a boom since the Grant & Wood Mfg. Co. took over the old Chelsea stove works and began making automatic screw machines. The new company has about 75 acres of land, which it will subdivide and place on the market for building purposes. The officers are: President, Robert M. Brownson, formerly secretary of the E-M-F Co.; vice-president, Dr. James B. Book; secretary, James B. Book, Jr.; treasurer, A. W. Wilkinson, Chelsea.

Directors of the General Motors Co. inspected the company's plants in Pontiac and Flint last week. The party included W. C. Durant, of Flint; J. J. Storrow, of Boston; Albert Strauss, of New York; M. J. Murphy and Thomas Neal, of Detroit. Mr. Durant has been spending considerable time in Detroit lately, arranging for the transfer of the company's general offices here. The date of the formal transfer has not been announced. Mr. Durant declares that the outlook for 1911 is most promising for the motor industry as a whole.

The era of puncture-proof tires is at hand, if the plans of the Durango Commercial Co., composed largely of Detroit and Michigan men, reach fruition. Professor John R. Allen, of the University of Michigan, secretary of the company, has discovered a new rubber-bearing plant in Mexico, and plans for its exploitation are already under way here. In this same connection the directors of the company are now negotiating with an eastern rubber expert who claims that, with his rubber, he will be able to produce a tire that will be absolutely puncture-proof. The company controls 856,000 acres of land in Mexico and expects to secure a lease on another tract just as large.

F. A. Harris, sales manager for the Brush Runabout Co., has been made general sales manager and will make his headquarters in New York hereafter. He was tendered a farewell banquet in the Hotel Pontchartrain, Saturday night, by Frank Briscoe and a number of department heads and branch managers.

The Hudson Motor Car Co. has made an addition to its engineering staff in the person of J. G. Vincent, formerly superintendent of inventions of the Burroughs Adding Machine Co. His title for the present will be that of acting chief engineer.

John E. Baker, secretary, and E. A. Nelson, designer and chief engineer of the Hupp Motor Car Co., have gone to Paris to attend the show in search of pointers. Before returning they will visit the company's English representatives, Whiting & Co., Ltd., of London.

A municipal repair shop, where all the motor cars owned by the city of Detroit may be kept in repair, is advocated by Controller Heineman and is likely to be established in the near future.

CHALMERS AGENTS VISIT MORGAN & WRIGHT PLANT

The Readers' Clearing House

EDITOR'S NOTE—In this department Motor Age answers free of charge questions regarding motor problems, and invites the discussion of pertinent subjects. Correspondence is solicited from subscribers and others. All communications must be properly signed, and should the writer not wish his name to appear, he may use any nom de plume desired.

CHICAGO RUN FIGURES

CLYMAN, Wis.—Editor Motor Age—In Motor Age, issue November 17, page 16, appeared a table giving the amount of gasoline used each day. It also gave the total amount of fuel used by each contestant during the 1,000-mile reliability run of the Chicago Motor Club. The make of carbureter used on each car was also shown, but the tabulation failed to show the bore and stroke of the engines. This latter information would make the table far more interesting. I wish Motor Age would publish a table giving the bore and stroke of all the cars which contested in the 1,000-mile reliability run. The weight of the cars given on page 19, I suppose is with full load of passengers.—A Wisconsin Reader.

The bore and stroke of all the cars that started in the recent 1,000-mile reliability run of the Chicago Motor Club are as follows:

No.	Car	Bore	Stroke	Model
11	Abbott	4	4¼	1911
1	Abbott	4	4¼	1911
16	Brush	4	5	1911
4	Cunningham	4¾	5¾	1911
12	Clno	4⅜	5	1910
114	Case	4¼	5	1910
107	Case	4¼	5	1910
100	Fal	4⅛	5¼	1911
10	Glide	4¾	5	1910
102	Grout	4¾	5	1910
117	Haynes	4¼	5	1911
2	Haynes	4¼	5	1911
103	Hupmobile	3¼	3⅜	1910
8	Henry	4⅛	5¼	1910
118	Hupmobile	3¼	3⅜	1911
7	Haynes	4¼	5	1911
108	Imperial	4⅛	4½	1911
9	Imperial	4⅛	4½	1911
115	Krit	3¾	4	1911
105	Lion	4½	5	1911
104	Moline	4	6	1911
106	Moline	4	6	1911
101	Midland	4½	5	1911
119	Moline	4	6	1911
110	Speedwell	5	5	1911
6	Halladay	4½	5	1910
110	Speedwell	5	5	1910
112	Staver	4	4	1910
113	Staver	4	4	1910
111	Halladay	4	4	1911

The weights given are those which were taken at the finish of the tour with all passengers and baggage aboard.

THE SQUARE MOTOR

Hot Springs, Ark.—Editor Motor Age.—What are the advantages of a square motor, if any, as compared to a long-stroke motor? I am about to purchase a car with a square motor; I have been told it is best for a hilly country, as this is.—Robert G. Davis.

It can readily be shown by calculation, and it also works out in a practical way, that with motors of equal bore the torque is in proportion to the stroke. It also can be shown by actual test that the powers of the same motors bear a like ratio so long as their revolutions per minute remain the same; and while it is true that the short-stroke motor may be operated temporarily at a higher number of revolutions per minute, it also is true that a motor with comparatively long stroke runs considerably slower during nine-tenths of the time when in actual operation on account of the higher permissible gear ratio. Not only does this give the motor, together with all its reciprocating parts, more life, but it very materially reduces the buzz and clatter which, of course, inevitably accompany the high speed engine. A long-stroke motor will develop more power at slower engine speeds than the short-stroke motor, and it, therefore, will show a greater tendency to hang on and draw a car over a grade without change of gears.

THE HIGH-SPEED MOTOR

Tacoma, Wash.—Editor Motor Age—Through the Readers' Clearing House will Motor Age kindly explain the relative advantages and disadvantages of a high-speed motor and a medium-speed motor?—Carlton Huth.

The high-speed motor is not to be advantageously compared with a low-speed motor. High speed in a motor is not an advantage, but a necessary evil of the short-stroke motor; and low speed in a motor, an advantage obtained by lengthening the stroke, is advantageous because it reduces the general wear and tear of the mechanism. A saving in weight and ability to attain higher speed are some of the characteristics which make the short stroke better suited to some phases of motor car work and especially adapted for use in aeronautics. As to the advantage of the long-stroke from a standpoint of general economy and wearing qualities, there can be no question, and the short-stroke motor is decidedly in the advantage when the question of weight is considered. Whether or not a long-stroke motor or one of a short stroke is preferable depends to a great extent upon the use to which the motor is to be put. In motor car service the long-stroke motor is particularly adapted for commercial cars, on which its increased weight and size is of little consequence, while its greater fuel economy and increased lease of life are valuable features. The aeronautic motors which have proven most successful are short-stroke motors. The short-stroke motor for the same power output must run at a higher speed of revolution. The inertia forces in a motor are proportional at equal piston speeds to the number of revolutions. These forces and the strains and vibrations which they entail therefore are greater in the short-stroke motor than in the long-stroke. The compression chamber of a long-stroke motor is more compact than in a short motor, thus assuring a slightly greater thermal efficiency for the former, and, turning at a lower speed of revolution, it is easier to secure a quiet operation in the long-stroke motor, of the various accessories, such as the valves, magneto and pump. It results from the above that, considered by itself, the long-stroke, or low-speed motor, is superior to the short-stroke, or high-speed motor from every point of view, except that of specific power, which, moreover, is not effected to any extent, when considered for use on a motor car. It may, therefore, be concluded that the speed of the motor should be as low as the requirements of the car will permit.

EDITOR'S NOTE—To the Readers of the Clearing House columns: Motor Age insists on having bona fide signatures to all communications published in this department. It has been discovered that the proper signature has not been given on many communications, and Motor Age will not publish such communications, and will take steps to hunt down the offenders of this rule if it is violated.

GEAR RATIO DEFINED

Chicago—Editor Motor Age—Through the Readers' Clearing House will Motor Age kindly answer the following questions?

1—When the gear ratio of a car is mentioned, I understand it means that on direct drive or high gear the crankshaft turns so many times to one revolution of the rear wheel. Is this correct?

2—As to the half-time gears, I would understand from the name that the gears turning the camshafts would make one revolution to every two of the crankshaft. Am I correct in this?

3—Please explain the manner of figuring ratio on a car such as the Pierce, using a selective four-speed gearset, which involves a countershaft in the transmission case, when driving in either first, second or third. To save trouble the number of teeth to each gear involved could be estimated.

4—Suppose one has a coil and does not know how strong a battery can be used in connection with it—how could this be determined?

5—Would it damage a four-cylinder, four-cycle motor to run several hours on only three cylinders, the fourth being out of service on account of some ignition trouble and which one might be unable to repair on the road? If so, how—E. S. V.

1—The gear ratio of a car is the ratio between the number of revolutions of the driving wheels and the crankshaft of the

motor. If the driving wheels of a car make one revolution to three revolutions of the crankshaft of the motor, the gear ratio of that car is 3 to 1. When the gear ratio of a shaft-driven car is spoken of, the ratio between the number of teeth on the driving pinion and the number of teeth on the larger driven pinion are meant, and on a chain-driven car the ratio between the number of teeth on the driving sprockets on the jackshaft and those of the wheel's sprockets generally are the determining factors. On direct drive, the crankshaft of the motor of a car with a 3 to 1 gear ratio would make three revolutions for every revolution of the driving wheels; but this does not necessarily mean that the same always is true when driving on the high gear, for in many four-speed gearsets the fourth speed is not direct but geared a little higher than direct, so that the drive or propellor shaft turns a little faster than the crankshaft of the motor. In Fig. 1, the driving pinion and gear of a shaft-driven car having a 3 to 1 gear ratio is illustrated. The pinion P, which is keyed to the propellor shaft T, has fourteen teeth, and the gear G, which is indirectly connected to the driving road wheels through the differential mechanism and the transverse drive shafts, has forty-two teeth; therefore, the pinion P must make three revolutions to make one revolution of the gear G.

2—Yes. The half-time gears make the camshafts turn half as fast as the crankshaft.

3—To find the gear ratio, or the number of revolutions of the last to one of the first in a train of gears and pinions: Divide the products of all the teeth in the driving by the product of all the teeth in the driven gears, and the quotient will equal the ratio of velocity required. For example, if a gear or pinion of ten teeth gives motion to a gear of twenty teeth which is secured to a shaft having another gear of ten teeth, and the gear of ten teeth gives motion to another gear of thirty teeth, and it is required to find the ratio between the speed in revolutions of the first gear of ten teeth and the last gear of thirty teeth, the product of the teeth of the driving gears, 10 by 10, divided by the product of the teeth of the driven, 20 by 30, would be 100 divided by 500 or a ratio of 1 to 5. The first gear would make one revolution for every five revolutions of the last gear.

The Pierce-Arrow four-speed gearset, with the top half of the case removed, is illustrated in Fig. 2. The gear 1, when in the position shown, is free to revolve upon the shaft MS. This gear has twenty teeth. It meshes with gear 2, which has forty teeth, and is fixed to the shaft CS; so that when the engine is running and the clutch is engaged, this shaft will revolve at half the speed of gear 1. Towards the other end of the shaft is keyed the gear 3. This has eighteen teeth, and it meshes with a gear 11, of thirty-two teeth, bolted to the sleeve L, which has a square hole in it, and can be made to slide upon the square shaft MS. This shaft, in the present case, will revolve 1.77 times fewer than the pinion 3, giving a reduction on the first gear of 3.55 times less than the engine speed. The gears 5 and 6 are equal, and when the sleeve L is moved so that these are in mesh, the shaft MS will be driven at the same speed as the shaft CS, or one-half the speed of the engine. This is the second gear. The gear 7 has a square hole in it and can be made to slide upon the square shaft MS. When this gear is in mesh with gear 8 the square shaft will revolve at three-quarters the speed of the engine; this gives the third speed. On the right-hand face of the gear 7 are four projections, which fit into recesses in the left-hand face of the gear 1, so when the sleeve is moved so that these engage, the shaft MS will revolve at the same speed as the engine. This gives high gear, which is direct from the engine to the propellor shaft T. On the end of the shaft CS, is keyed the gear 9, which has fourteen teeth. This meshes with a gear 10, below it. When the sleeve L is moved to the extreme left, the gear 11 then engages with 10. The shaft MS thus revolves in the opposite direction, giving the reverse, which is 4.56 times less than the engine.

4—The strength of battery for which a coil is designed is best learned from the maker of the coil. If you had given the name of the maker, perhaps Motor Age could have given you a definite answer. If it is an ignition coil of the vibrator type, providing the coil is in good condition, the size of battery required might be learned by properly adjusting the vibrators and then testing its efficiency with three or four dry cells. If these do not seem to be enough, try six dry cells. This, however, is not a positive test, for if there is something wrong with the coil, the contact points, vibrator adjustments, wiring or spark plug, a coil designed for only 4 volts would not work efficiently on a 4-volt current, but would appear to give satisfactory results on a 6-volt current, and if subjected to continued use with a 6-volt current, the contact points would be burnt off with undue rapidity.

5—The damage that might be done to a car and motor by running them for several hours would depend to a very great extent upon the design and construction of the car and motor, and the speed at which the motor is run. When a motor of the four-cylinder, four-cycle type, misses an explosion there is a lull in the constant speed, or torque of the flywheel, and when the following explosion takes place there is a jerk, so to speak, which puts a sudden strain on almost every mechanism or practically upon the whole car.

MIXING FUEL AND OIL

Dubuque, Ia.—Editor Motor Age—As a great many marine engines are being run by mixing the cylinder oil with gasoline, discarding the oil cup entirely, I would like to have the opinion of Motor Age on this practice as applied to a four-cylinder motor car engine.—A Subscriber.

Motor Age knows of no reason why the method of mixing the lubricating oil with the fuel could not be successfully applied to the lubrication of a four-cylinder motor car engine. It is claimed by a good authority that this means of lubrication was very satisfactorily employed for an entire winter on a four-cylinder Rambler.

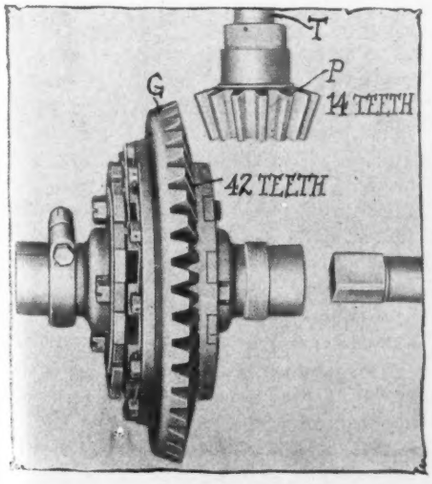


FIG. 1—SHOWING GEAR-RATIO

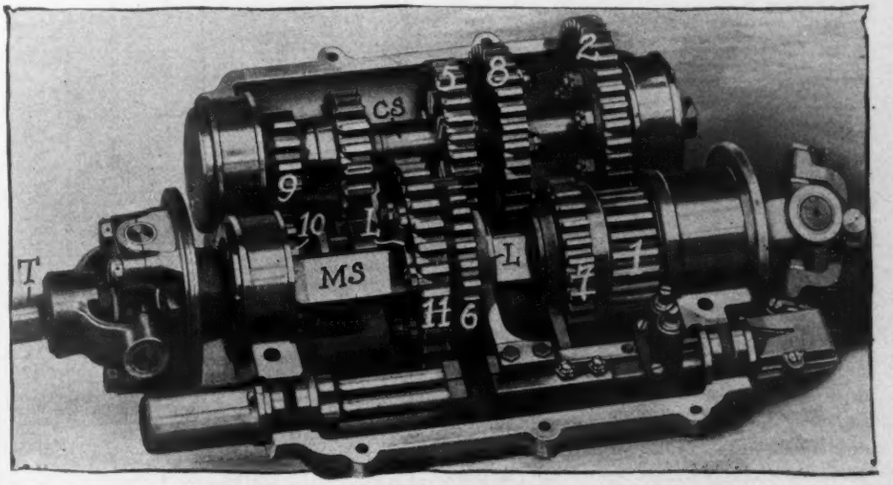


FIG. 2—THE PIERCE-ARROW FOUR-SPEED GEARSET WITH TOP HALF REMOVED

THEORY OF SEVERAL CARBURETER PROBLEMS

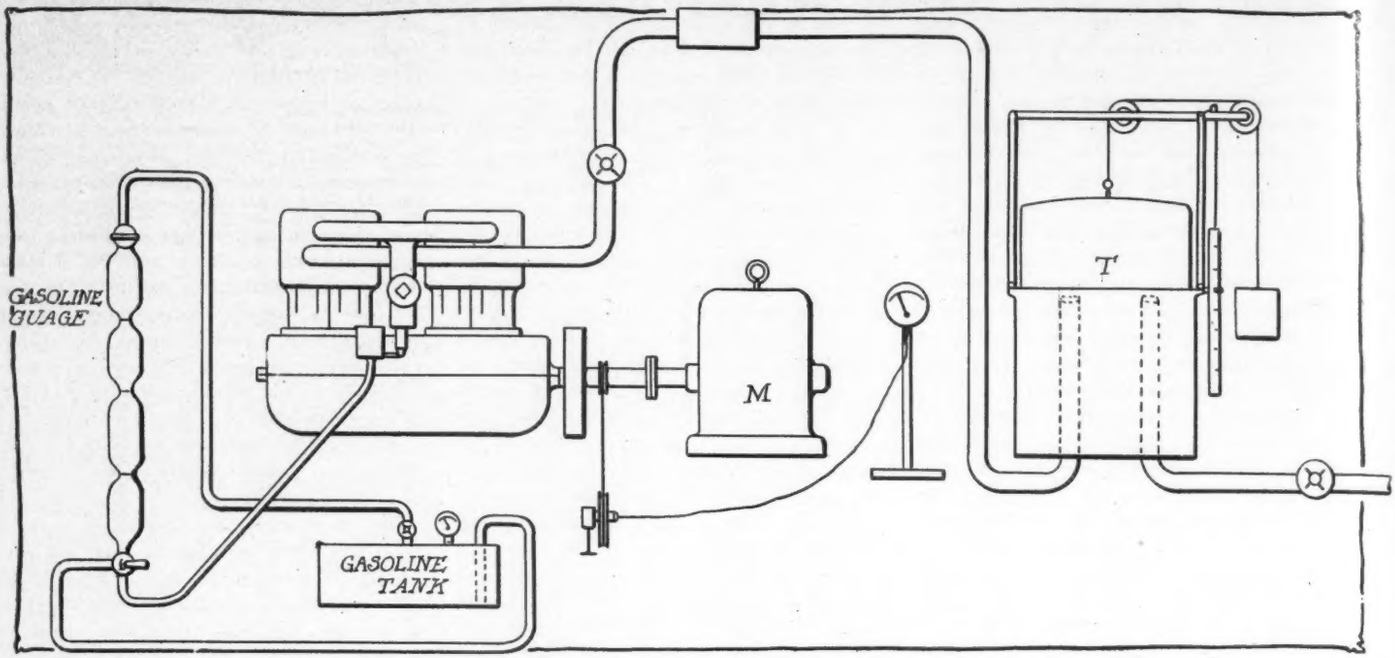


FIG. 1—DIAGRAM OF ARRANGEMENT USED FOR THE TESTS

EDITOR'S NOTE—Paper read November, 1910, before the members of the Institution of Mechanical Engineers, London, by F. W. Lanchester, President of the Institution.

THE work on which the following results and conclusions are based was undertaken at the Daimler Motor Works some 3 years ago as preliminary to an attempt to design a paraffin carbureter suitable for traction work. The difficulties of the task were twofold, the low vitality of the paraffin giving rise to one set of problems, while the narrower limits of smokeless and odorless combustion, as compared with those of gasoline, intensified the difficulties met with in an ordinary carbureter of obtaining suitable fuel mixtures over the wide range of demand required by a modern road engine. It was therefore necessary to find or design a carbureter which could give a mixture of fairly constant composition. Investigations which had been made on carbureter action assumed the steady flow of both air and liquid fuel, with apparently misleading conclusions when applied to designing a carbureter for the actual engine.

Dr. Watson, in his paper on "Thermal and Combustion Efficiency," shows the character of the pressure variation in the induction pipe of a four-cylinder gasoline engine at a speed of 656 revolutions per minute with open throttle, see Fig. 9, which is copied from Dr. Watson's paper. In this particular case it appears that actual reversal of flow takes place, so that any argument based on steady flow must be regarded with suspicion.

It was decided to ignore as far as possible all formulæ relating to steady flow, and to measure directly the related quantities of gas and liquid induced under the engine suction. In the first series of experiments, as will be seen, the writers fell from grace, and estimated from pressure the amount of exhaust gas dealt with. The possible danger of error was recognized, but as the necessary apparatus for directly measuring the volume of air was obtainable, and the correctness of the conclusions based on this method was confirmed by gas analysis, no misgivings were entertained as to the general accuracy of the results.

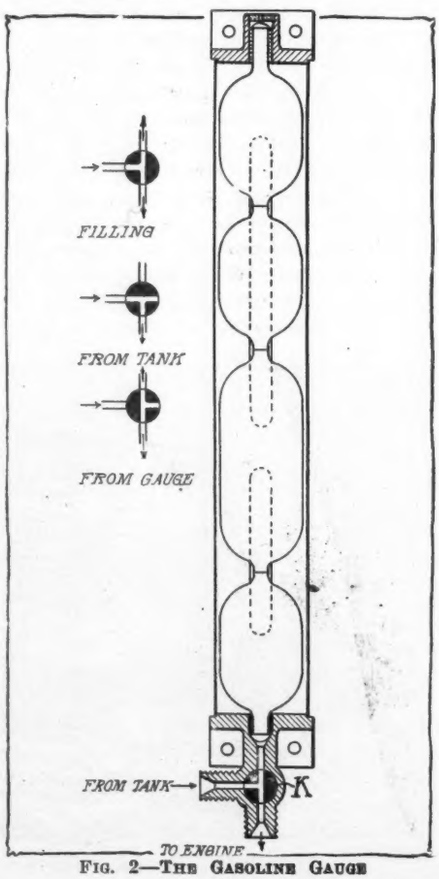


FIG. 2—THE GASOLINE GAUGE

Last year it was found possible to lay down a more complete equipment at the Merchant Venturers' Technical College, Bristol, and to confirm the results of the previous work.

The outfit at the Daimler works consisted of a standard four-cylinder engine, 124 millimeters bore by 150 millimeters stroke, with tappet valves, driven through a belt and speed cones by a two-phase motor, Fig. 1. The engine was fitted with a graduated gasoline gauge, and the exhaust passed into a small tank T of about 2 cubic feet capacity perforated with several ½-inch holes; the pressure in this tank was read on a suitable gauge, and converted into volumes.

Fig. 1 is a diagrammatic representation of the apparatus employed in the later series of experiments. The motor M was an 8 horsepower direct-current, and the speed regulated by inserting resistances in the armature circuit. At first it was found impossible to maintain constant engine speed, as the temperature of the resistance coils varied greatly in use. Fortunately the resistance was one day overloaded and fused, and a water resistance installed in its place. With this, great constancy of speed was obtained, and over a 10 minutes' run a speed variation of less than 0.4 per cent could be maintained.

The gasoline gauge shown diagrammatically in Fig. 2 enabled accurate measurements of 100, 200 or 300 c.c. of gasoline to be taken, and was designed with the object of enabling readings of gasoline consumption to be taken with an en-

gine running under its own power, without stopping from time to time to refill the gauge. The threeway cock K enables the gauge to be filled from the main tank without disturbing the supply to the engine. When the gauge is filled the cock is set so that the engine alone is in communication with the tank. A further movement of the cock cuts out the main tank and connects the gauge to the engine. This has been found a most convenient form of apparatus both for road and bench work. Used with an engine which is driven by an electric motor, as in the present case, it is equally convenient, as the gasoline level in the float chamber remains practically constant with the gauge in or out of action. One precaution was found to be necessary in using this instrument: the pressure of the gasoline, when fed from the gauge chamber, differed from that when fed from the main tank, causing a slight difference in float level in the two cases. To prevent error the gauge was always filled some 20 c.c. above the upper constriction, so that by the time the gasoline had fallen to this point the float level had adjusted itself; the average pressure employed was 1½ pounds per square inch. The passage of the gasoline past the constrictions of the gauge was sharply marked, so that readings of 100 c.c. in 20 seconds could be taken correct to 0.2 second; as a rule much longer periods were taken.

The carbureter used in the first experiments varied in form, but the plain-tube carbureter used at Bristol will serve as a type of the others. The section is shown in Fig 3, and it is seen to have consisted of a throttle T in a straight tube fitted with bushes of various diameters, and standing over a gasoline jet J, which stood inside the bush. Pressures at the jet were read by means of a fine brass tube N fixed near the jet as shown.

The earlier carbureters used were simply lengths of 1¼-inch copper pipe swept horizontally so that the air flowed across the jet, and not along it.

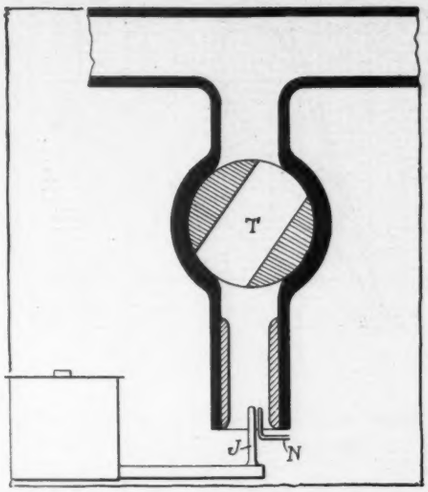


FIG. 3—PLAIN CARBURETER DESIGN

In the later experiments the air was measured by observing the time required to pass 30 cubic feet into the gasholder, observations of temperature and barometric pressure being made. In the last series of experiments which were taken to confirm previous work the barometer, temperature and humidity were so nearly constant that it was thought unnecessary to apply an atmospheric correction which would affect all readings proportionally. In several cases worked out the correction factor was found to be 1.005. Again, no correction has been made for the volume of gasoline vapor, as this correction does not affect the main conclusions which follow, as will be shown later.

The gas measurements further required a correction for leakage on the induction and the exhaust side of the engine. On the induction side, beyond making the induction pipe joints gas tight, no attempt was made to prevent leakage. The engine was practically new, and was placed on the bench fresh from overhauling. There was no perceptible leakage past the pistons, but at hight vacua there were indications of considerable air flow up the valve guides, although the valve stems were a good fit and were well lubricated. It was decided to allow this leakage to continue, as it was a factor with which the carbureter must deal. Afterwards it was argued that this leakage could have varying values with different engines, so that it was desirable to obtain a value for it; accordingly a correction was obtained in the following manner: the engine was first run with closed throttle, and the quantity of air passed into the tank per minute measured; at the same time the suction in the induction pipe on the engine side of the throttle was taken.

The throttle was then opened to successive marked positions, with the engine running at a constant speed, and the suction in the induction pipe noted for each position. Since the leakage took place through long and narrow openings it was assumed that the relationship of suction to leakage was linear. Accordingly, to every air reading taken with the tank a correction proportional to the suction in the induction pipe was made. The value of this correction is shown by means of the dash line in Fig. 4. In this, gasoline per minute is plotted against air per minute taken by the engine at different speeds and throttle positions; the plain line graphs are corrected for leakage, and give the relationship between gasoline and air which has passed the jet. The dash line is the graph obtained by plotting uncorrected air.

With regard to the correction for losses on the exhaust side, it was found that with clear exhaust pipes the back pressure never exceeded 48 inches of water, and with the 500 revolutions per minute series of experiments, 24 inches. The leak-

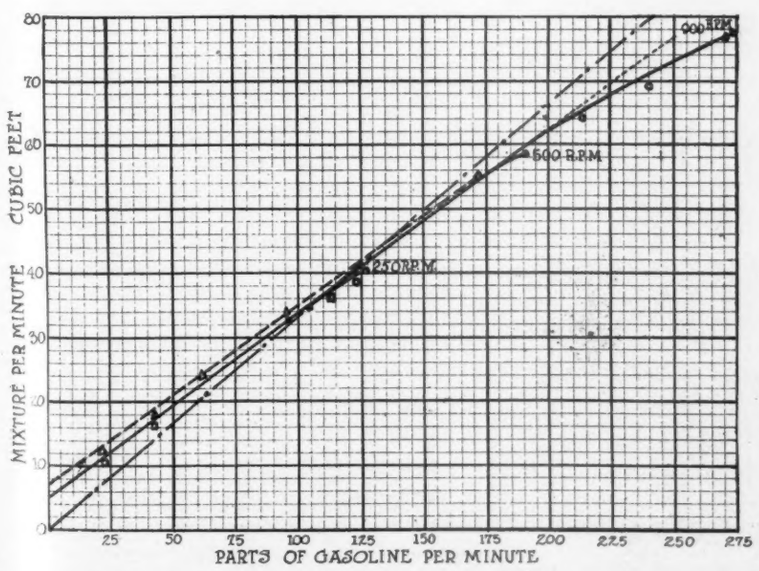


FIG. 4—CHART SHOWING CHARACTERISTICS OF PLAIN TUBES IN CARBURETERS

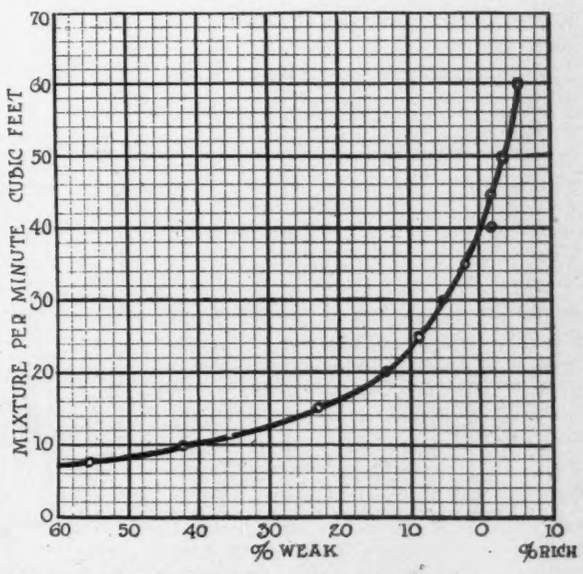


FIG. 5—PERCENTAGE VARIATION OF MIXTURE STRENGTH WITH PLAIN-TUBE CARBURETERS

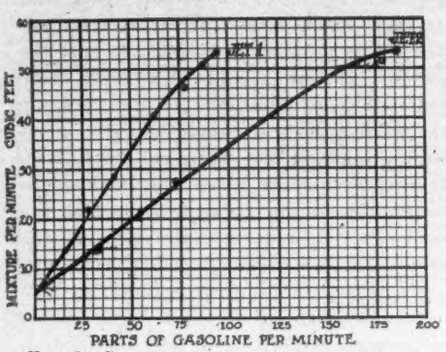


FIG. 6—SHOWING THE EFFECT OF JET SIZE

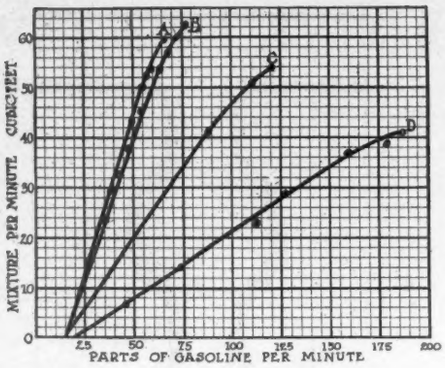


FIG. 7—EFFECT OF THROAT SIZE

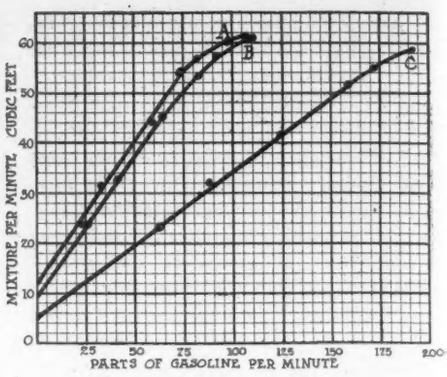


FIG. 8—CARBURETER CHART

age at this pressure was less than ½ cubic foot per minute at open throttle, and fell away very rapidly with closing throttle. No correction was made for this leakage.

The range of speeds over which the experiments were taken was not so great as desired, the electric motor being quite overloaded by the engine, a 124 millimeters by 150 millimeters Daimler engine with tappet valves.

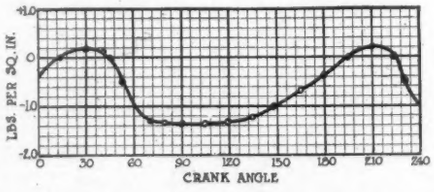
The results are presented in the form of graphs, which have been obtained from simultaneous readings of gasoline and air as shown in Fig. 4, and those following.

Fig. 4 may be taken as typical of the whole. This is the gasoline air graph of the plain-tube carbureter at the approximate speeds of 250, 500, 900 revolutions per minute with a bush ¾-inch diameter. It will be seen that the main parts of the superimposed curves lie on a straight line, and that the upper end of the graph for each speed droops towards the gasoline axis. Neglecting the drooping parts of the graphs for the present, it then follows that the law connecting gasoline and air flow in a carbureter of this type is of the form—

$$y = a + bx$$

It may be said that this conclusion is borne out by every similar experiment made by the authors on various engines, which include four old type Daimlers, two new type Daimlers, one Talbot, and a Darracq.

Accepting this law connecting gasoline and air in plain-tube carbureters, the running of an engine with such corbureters is at once explained. The chain line in Fig 4 shows the graph of constant fuel mixture of such composition as will approximately give complete combustion of both air and gasoline; this may be called the ideal line or line or correct mixture. Any point on a graph lying between the air axis and the ideal line indicates a weak mixture, while a point on the other side of the ideal line indicates a rich mixture. It is now clear that this plain-tube carbureter must give a weak mixture until the consumption reaches 30 cubic feet per minute; for higher gas consumption the mixture becomes richer and richer. Hence the graph shows, as is borne out by experience, that with this carbureter the engine would be difficult to start without flooding, would not run or pull at a low speed, and when opened out the mixture would be slightly rich. It is a defect of this type of graph that it does not readily show the percentage variation from constant mixture. Fig. 5 shows the percentage composition of the mixture plotted against air. It should be borne in mind that all the graphs shown are corrected for leakage on the induction side of the engine, hence the intercept on the air axis appears less than actually is the case. This correction leaves the type of the graph unchanged; the same is true of the correction which could be made for the volume of vaporized gasoline. The volume of gasoline vapor is proportional to the quantity of gasoline taken, hence the correction would tend to slightly decrease the inclination of a graph. Here, again, the type of graph is unaltered, so that the main conclusions are unaffected. The value of the intercept on the air axis is of importance, for if this were reduced to zero the plain-tube carbureter could be made to give quite good results, at least over that range which gives the straight line part of the graph. The leakage past the valve stems, indicated by the dash line in Fig. 4, is seen to be one important factor in the displacement of the carbureter characteristic from the diagonal; but this leakage does not entirely account for the displacement of the graph. The height of gasoline in the jet may have a considerable effect on the gasoline delivery at low suctions, and readings were taken with a carbureter set to flood over the jet. The first readings brought the graph on the rich side of the ideal line, but as the suctions went up the succeeding readings showed that the flooding was not then affecting the delivery of gasoline to an appreciable extent. If the gasoline level be so set that the slightest suction causes gasoline to flow, the characteristic is found to retain the same value for the intercept on the air axis, but is rounded at the lower end to pass through the origin.



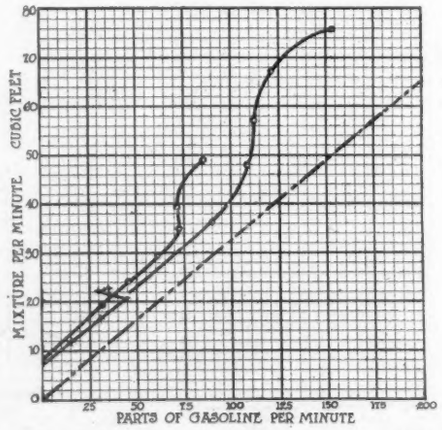


FIG. 9—PRESSURE VARIATION IN INTAKE MANIFOLD

FIG. 15—SINGLE JET, MECHANICAL EXTRA AIR

Characteristic Curves

Effects of engine speed are at once obvious from Fig. 4. The straight line part of the characteristic is extended along the line $y = ax + b$, which is peculiar to that arrangement of the carbureter, while the droop is only slightly modified if at all. The same holds good for higher speeds than indicated here.

The size of the jet modifies the slope of the straight-line characteristic, as might be expected. Fig. 4 gives the graphs obtained with two jets, the smaller having an aperture one-half the area of the larger. The characteristic is seen to swing on the point of intersection with the air axis as a hinge, so that by suitably setting the jet the characteristic of such a carbureter may be set parallel to, or at any desired angle with the ideal line.

Variation of cross section of throat modifies the suction on the jet for equal deliveries of air, and consequently modifies the carbureter characteristic. Bushes of the following diameters were used with the same jet:

A	1¼ inch
B	1 inch
C	¾ inch
D	½ inch

These varying velocities past the jet affect both the slope of the characteristic and the intercept on the air axis, see Fig. 7. The characteristics converge towards a point on the gasoline axis behind the air axis.

The droop from the straight line, seen on the characteristics, appears to a greater or less extent on every curve taken Fig. 8 gives the characteristics obtained with throats A B C at 500 revolutions per minute. It is seen that the maximum quantity of air per minute with A and B is the same, the curve of the droop in the case B being slightly the flatter. In the case of C the droop is still less pronounced. Measured in percentage deviation from the straight line relationship the droops are:

A	23 per cent
B	17 per cent
C	5 per cent

The engine in cases A and B has nearly reached the maximum intake of air with open throttle, so that further throttle opening serves to enrich the fuel mixture without greatly increasing the quantity of air taken.

Attention has already been called to Dr. Watson's observation that strongly marked oscillations of pressure occur in the induction pipe of an engine, see Fig. 9, due to resurgence on opening of inlet valves and to inertia effects generally. These same effects will occur in the partially throttled pipe, but the pressure variations will be damped by the high gas velocities at the partly closed throttle. On opening the throttle, lower gas velocities are obtained with less and less damping action so that the surges of gas are more strongly felt at the jet. With open throttle this surging can be so strong as to carry gasoline outwards from the induction pipe. The result is that a unit volume of air in surging flow induces a larger quantity of gasoline than the same volume in steady flow.

It has been suggested that the high gas velocities in a partly closed throttle serve to damp this surging. The same would be true of high velocities around the jet, and this conclusion is borne out by the smaller droop observed with throat C. The authors made efforts to wipe out this droop by inserting silencers of various types between the engine and the jet, with quite satisfactory results. Care was taken that a silencer was used which offered no serious resistance to the passage of air. Fig. 10 is the graph obtained in a silenced carbureter using high velocities around the jet.

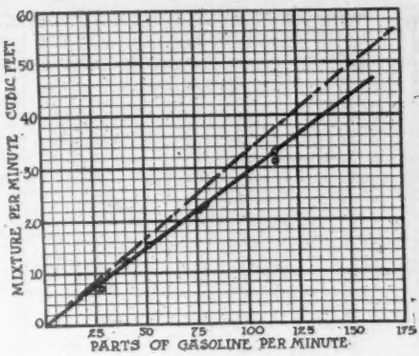


FIG. 10—CHART FROM SILENCED CARBURETER

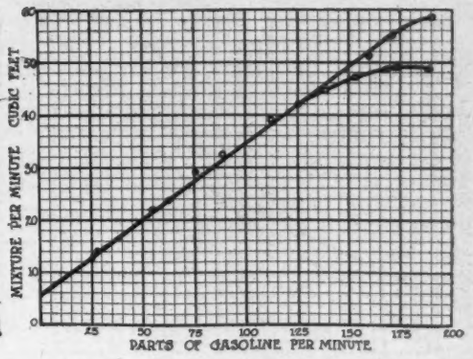


FIG. 11—SHOWING EFFECT OF BACK PRESSURE

Without this droop the characteristic of a plain-tube carbureter for all speeds and throttle positions would be a straight line graph. The droop for wide open throttle positions causes the graphs for successive speeds to cover a wedge shaped area, so that with the same delivery of air various quantities of gasoline may be obtained. It should be noticed that this variation is more apparent than real, for in the examples shown, up to 0.8 of the maximum air delivery possible at any speed the characteristic lies on the straight line.

The cause of the droop in the carbureter curve has been stated to be resurgence in the induction pipe, which makes itself seriously felt when the throttle is wide open. It may be urged that the droop may be caused by a change in the type of air flow set up at certain conditions of velocity and throat area. If this were so, it would be expected that the characteristics obtained at different speeds with the same bush would all show the graph falling from the straight line at the same point. Reference to the superimposed curves obtained with the same bush at speeds of 300, 500 and 900 revolutions per minute, Fig. 4, shows that the droop begins to be apparent at points indicating different velocities with different speeds.

Variation in back pressure may be expected to affect the characteristic, for in general, the pressure in the cylinder on the opening of the inlet valve is greater than that in the induction pipe, so that a rush out of the cylinder takes place, setting up surging, see Fig. 9. This effect will be greater, the greater the back pressure; and as a consequence it may be expected that other things being equal a high back pressure will give a carbureter characteristic with a greater droop than that obtained with a low back pressure. This is brought out in Fig. 11, which shows characteristics obtained with normal back pressure, and with a pressure of 5 pounds per square inch.

Number of Cylinders

The adjustable tappets on the valve lifters of the engine were removed first from the two back cylinders, leaving the two front ones in action. Afterwards the third cylinder tappets were removed. In this way characteristics were obtained with two cylinders and with one cylinder in action. These are shown in Fig. 12, together with a characteristic taken with four cylinders.

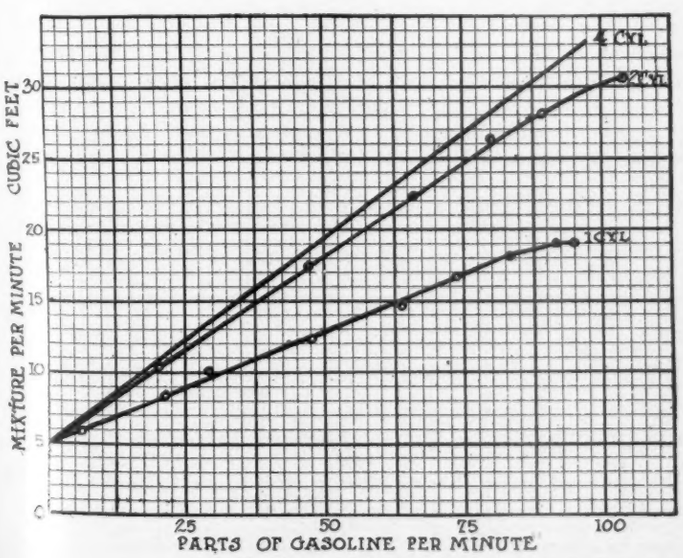


FIG. 12—SHOWING EFFECT OF NUMBER OF CYLINDERS

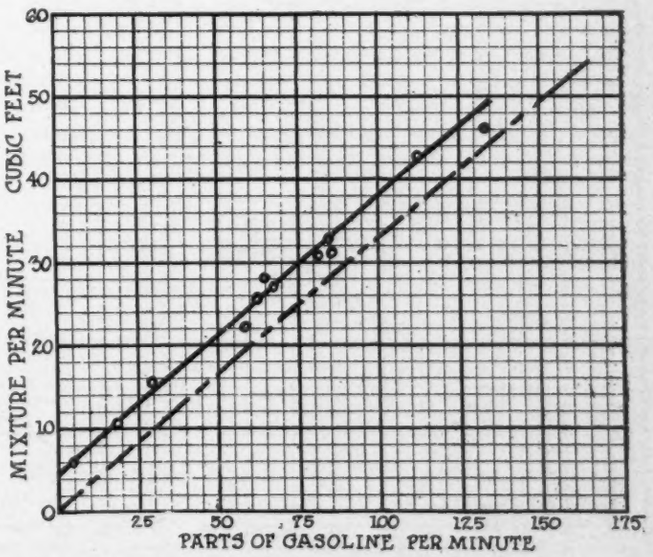


FIG. 14—FROM CONSTANT AIR CARBURETER

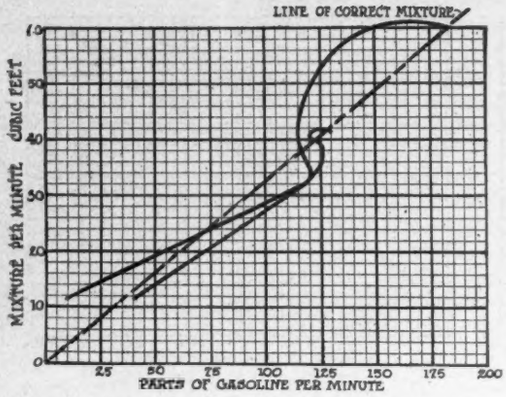


FIG. 16—SINGLE-JET—SPRING CONTROLLED AIR

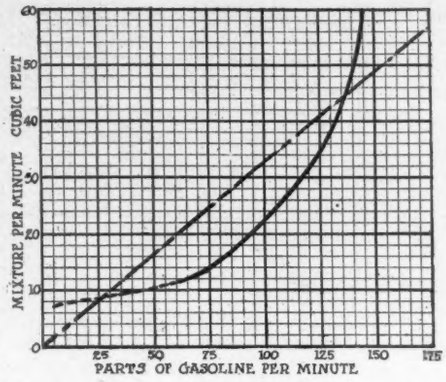


FIG. 17—SINGLE-JET—SPRING CONTROLLED AIR-THROTTLE FIXED

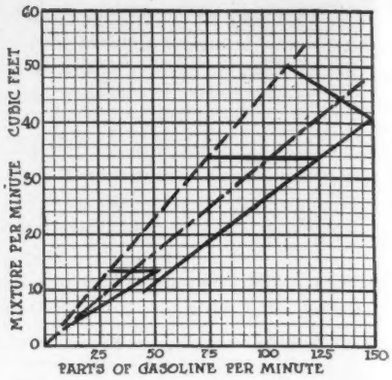


FIG. 18—SINGLE-JET CARBURETER CHART

The characteristic of a plain-tube carbureter for all speeds has been shown to be a straight line, neglecting droop. The slope of this graph may be varied to any degree by selecting a suitable jet. Let the jet be adjusted so that in a given plain-tube carbureter the characteristic lies parallel with the ideal line. The mixture delivered is now weak all along the line, very weak at first, and becoming very nearly correct for large consumptions of air. Another way of stating this, is to say that in such a plain-tube carbureter there is a constant shortage in the delivery of the liquid.

This being so, the designing of a constant-mixture carbureter is within reach of attainment; allow the constant shortage to dribble into the induction pipe and the problem is solved, except for questions of convenience. Fig. 14 is the graph of a carbureter set ready for this constant extra supply.

The droop on the characteristic for any given speed does not necessarily lead to waste of gasoline, for the graph may be so set that the terminal points of the characteristics be parallel to the ideal line; a suitable constant supply then enables the ideal mixture to be obtained at all open throttle positions. At intermediate throttle positions the mixture would be weak, but if the statement be accepted that such weak mixtures are economical this would be a desirable feature. In any event when maximum torque was required at any speed the required mixture could be obtained by fully opening the throttle; with throttled positions maximum torque is obviously not required.

To sum up, there appears to be no necessity in any carbureter for extra air devices, or the multitudinous contraptions employed, other than a neat form of apparatus for supplying this constant extra supply of gasoline.

It may be objected that the foregoing results have been obtained under conditions which do not occur in practice. This is true, and to estimate the effect of actual running conditions in modifying the characteristics obtained by driving the engine by an electric motor, measurements

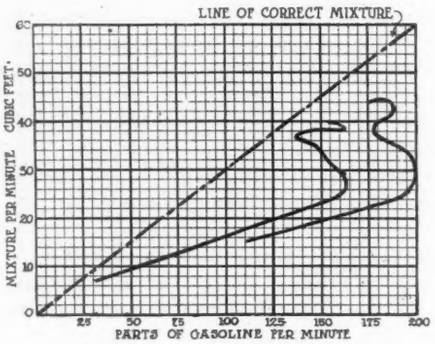


FIG. 19—TWO-JET, MECHANICAL EXTRA AIR

of air and gasoline consumption have been taken with the engine running under its own power. The apparatus employed was the same, except that the electric motor was cut out and replaced by a rope brake. The engine speed was held constant for various throttle openings by varying the load on the brake, and then readings of air and gasoline were taken as before. The results obtained bore out completely those obtained by driving the engine by an electric motor. Fig. 10 is a graph obtained in this way.

THE CHARM OF THE ROAD

"Give me the open road, the wide sky above, an unknown country before me, even though it be a portion of England, a sympathetic companion with whom to exchange ideas, ample leisure to loiter on the way, a reliable car to travel in, and I ask no greater favor of the gods, or man," says James John Hissey in his book entitled "The Charm of the Road." This tour, an unpremeditated trip, beginning at the author's home in Eastbourne extended over southwestern England and Wales. Speed formed no part of the program, perfect freedom being the essence of it. "A guide book," says the author, "robs a tour of half its pleasure. Better than guide books are reliable maps; these are helpful and suggestive, but not dictatorial—they leave you to do your own romancing. * * * The chief charms of a journey lie in exploring. To be prepared beforehand for what you are going to see is to destroy this charm, and probably court disappointment." It is the charm of such a tour, wandering at will, "taking the fortune of the highway and the lane, just driving from time to time in whatever direction the country looks the most inviting, or the mood of the moment inclines," that Mr. Hissey has entertainingly recorded, describing the historic places passed through and the country folk met on the open road. There are twenty-eight illustrations and a map showing the itinerary of the trip. Macmillan & Co., New York, are the publishers.

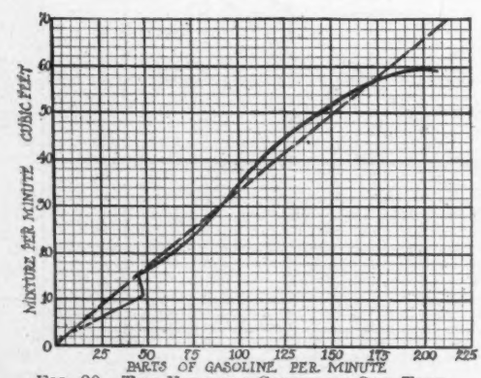


FIG. 20—TWO-VARIABLE CHOKE ON ONE TEST

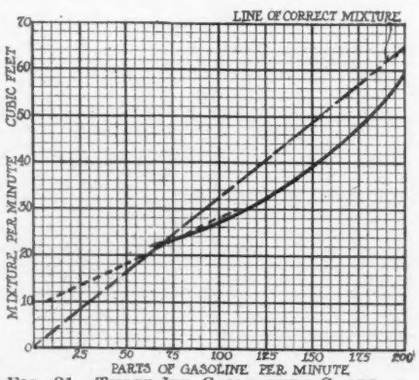


FIG. 21—THREE-JET CARBURETER CHART

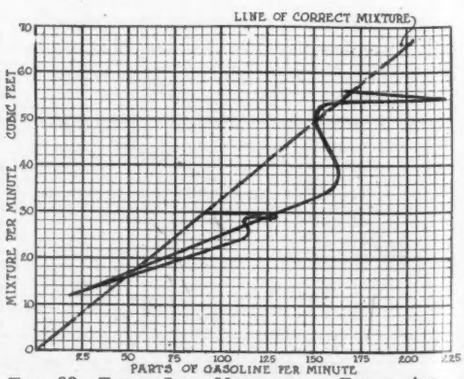


FIG. 22—THREE-JET—MECHANICAL EXTRA AIR

The Motor Car Repair Shop

Hints for the Amateur

THERE is a general misunderstanding in the minds of many motorists and repairmen throughout the country as to the means of testing the quality of gasoline by means of a hydrometer, and as to the difference between a hydrometer reading directly in specific gravity and one equipped with a Beaume scale. A hydrometer is a glass instrument consisting of a glass tube loaded at the bottom with mercury or fine lead shot, and with a bulb blown near the weighted end. It has a graduated stem and when allowed to float in the liquid to be tested, the specific gravity is indicated by the distance to which it sinks in it, or by the graduation, which is on a level with the surface of the liquid. The graduation of a hydrometer differs according as the liquid for which it is to be used is heavier or lighter than water; therefore, an attempt should not be made to measure the specific gravity of gasoline with a hydrometer designed for testing the gravity of electrolyte for storage batteries, etc. Special gasoline hydrometers are obtainable which are provided with either a Beaume scale or a specific gravity scale.

In Fig. 1 two gasoline hydrometers are shown floating in water, one having a Beaume scale and the other having a scale reading direct in specific gravity. On the Beaume scale the graduation 10 registers with the surface of the water, and on the specific gravity scale the instrument registers 1.00, which is as it should be, distilled water at 60 degrees Fahrenheit being taken as unity. It might be well to state here that with every 10 degrees' variation in temperature of a liquid when tested there is a variation of 1 degree on the Beaume scale; and with every 20-degree variation in temperature there is a variation of 1 degree specific gravity; 60 degrees Fahrenheit, the normal temperature, being understood when temperatures are not specified in connection with readings: Measured on the Baume scale, it will be seen that higher specific gravities are denoted by lower numbers, and lower specific gravities by higher numbers without definite graduations; and for the benefit of those using or intending to use the Beaume hydrometer the following conversion table is given:

Table showing specific gravities indicated by Beaume Hydrometer readings for liquids lighter than water, temperature 60 degrees Fahrenheit.

Beaume	Specific Gravity	Beaume	Specific Gravity
10	1.0000	51	0.7734
11	0.9929	52	0.7692
12	0.9859	53	0.7650
13	0.9790	54	0.7608
14	0.9722	55	0.7567
15	0.9655	56	0.7526
16	0.9589	57	0.7486
17	0.9523	58	0.7446
18	0.9459	59	0.7407
19	0.9395	60	0.7368
20	0.9333	61	0.7329
21	0.9271	62	0.7290
22	0.9210	63	0.7253
23	0.9150	64	0.7216
24	0.9090	65	0.7179
25	0.9032	66	0.7142
26	0.8974	67	0.7106
27	0.8917	68	0.7070
28	0.8860	69	0.7035
29	0.8805	70	0.7000
30	0.8750	71	0.6965
31	0.8695	72	0.6930
32	0.8641	73	0.6896
33	0.8588	74	0.6863
34	0.8536	75	0.6829
35	0.8484	76	0.6796
36	0.8433	77	0.6763
37	0.8383	78	0.6730
38	0.8333	79	0.6698
39	0.8284	80	0.6666
40	0.8235	81	0.6635
41	0.8187	82	0.6604
42	0.8139	83	0.6573
43	0.8092	84	0.6542
44	0.8045	85	0.6511
45	0.8000	86	0.6481
46	0.7954	87	0.6451
47	0.7909	88	0.6422
48	0.7865	89	0.6392
49	0.7821	90	0.6363

In Fig. 2 the same hydrometers shown in Fig. 1 are again illustrated floating in gasoline. The gasoline is of a grade generally sold to motorists, as it was purchased from a garage in the business district of the city of Chicago; it is, however, a few degrees heavier perhaps than it was originally or when first purchased, as it has been standing in a warm place for a couple of weeks. The gasoline usually sold to the motorist has a specific gravity of about .72, which is equivalent to from 62 to 64 degrees Beaume. The difference in the readings of the two hydrometers is very clearly shown in this illustration, as is the opposite direction in which the stems are graduated. The lower the specific gravity readings of gasoline, the more volatile it is and the more readily can an engine be started with it; and the same is true for the higher readings on the Beaume scale.

Specific gravity is the ratio of the weight of a body to the weight of an equal volume of some other body taken as the standard or unit. This standard is usually water for solids and liquids, and air for gases.

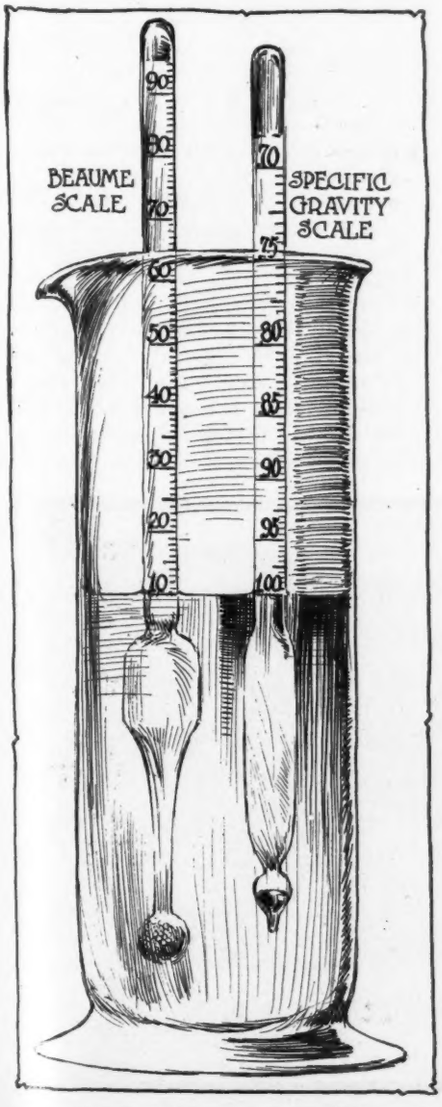


FIG. 1—HYDROMETERS IN WATER

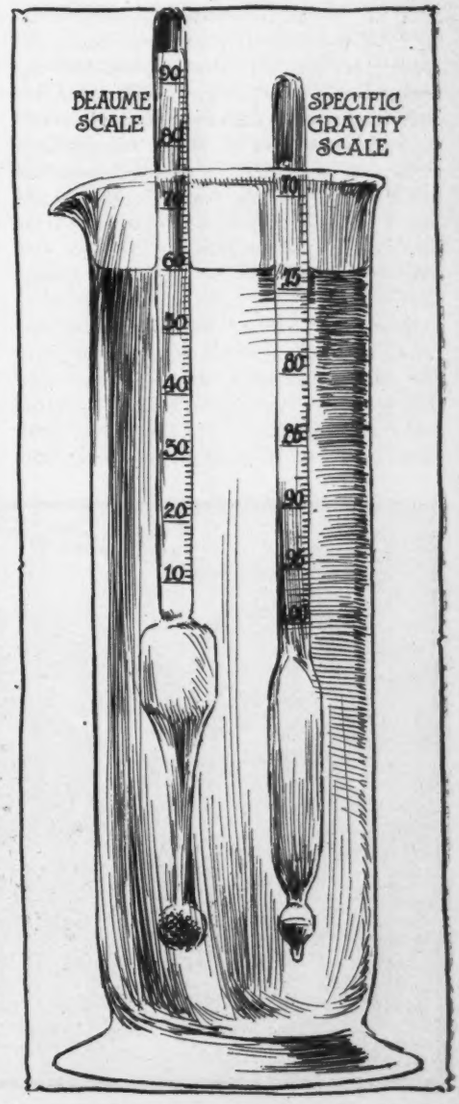


FIG. 2—HYDROMETERS IN GASOLINE

SIX-CYLINDER NEW IN THE LOCOMOBILE LINE

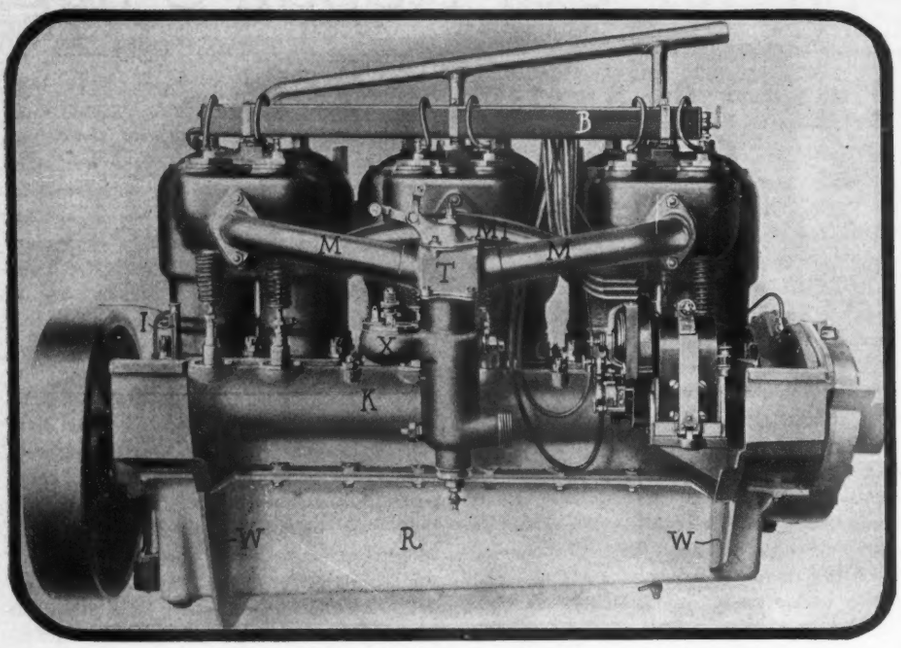


FIG. 1—LOCOMOBILE 4½ BY 4½ SIX-CYLINDER 1911 MOTOR

ONE of the interesting announcements of the season in the way of a 1911 model is that of the Locomobile Co., Bridgeport, Conn., which offers for the first time a six-cylinder model and includes in this model many other changes new with this concern. To briefly summarize some of the leading features of this new six it will be well to begin with the use of a jump spark system of ignition with current taken from a high-tension magneto.

Heretofore all of the Locomobile cars have used the low-tension system with the spark produced by a hammer-and-anvil device within the cylinder and operated from the camshaft. In the jump spark system the spark plug with direct high-tension leads from the magneto is used. But of equal interest on this new six is a circulating system of oiling the motor, the details of which will be given later; a seven-bearing crankshaft, in spite of the fact that the bonnet on the six-cylinder chassis is but 3 inches longer than that on the four-cylinder type; a multiple-disk clutch and a bevel rear axle. This new Locomobile six takes the place of the large chain-driven Locomobile of this season, so that for 1911 there will be nothing but shaft-driven Locomobile models. The company has in addition to this new six a four-cylinder car which is a continuation of the present one, having such improvements as the jump spark ignition system.

To get the two Locomobile models clear in the mind, the reader must remember that the four-cylinder type is styled model L and has cylinders 4½ inches square; and that the six-cylinder chassis is known as model M and uses the same cylinder castings as in the L; in fact the six-cylinder motor is exactly 50 per cent bigger than the four. The six-cylinder type is illustrated in Figs. 1 & 4 and the four-cylinder in Fig. 2.

The compactness of the six-cylinder motor is obtained by mounting the crankshaft Fig. 5 on seven bearings, 1, 2, 3, 4, 5, 6 and 7. The bearings 1, 3, 5 and 7 are longer than the bearings 2, 4 and 6 because the latter are mounted between the two cylinders forming each of the twin castings. It is customary where cylinders are cast in pairs to have a crankshaft bearing between adjacent pairs of cylinders, but the Locomobile company has followed the European practice of placing a bearing between the two cylinders forming each casting. The object of such a construction is at once apparent. Many manufacturers have wrestled long with the crankshaft problem on six-cylinder designs. Due to the length of the shaft what is termed whipping has to be guarded against, and this is best done by the use of the seven bearings. All seven of these bearings are carried in the upper half of the crankcase which is made of government bronze, this metal affording greater rigidity than aluminum or its alloys. The Locomobile company has used bronze in this part of the crankcase as well as in the main part of the gearbox casting for several seasons. The lower half of the case is an aluminum alloy. Fig. 1 shows however how strength is obtained in this part of the case by the use of heavy vertical webs W extending downwards from the

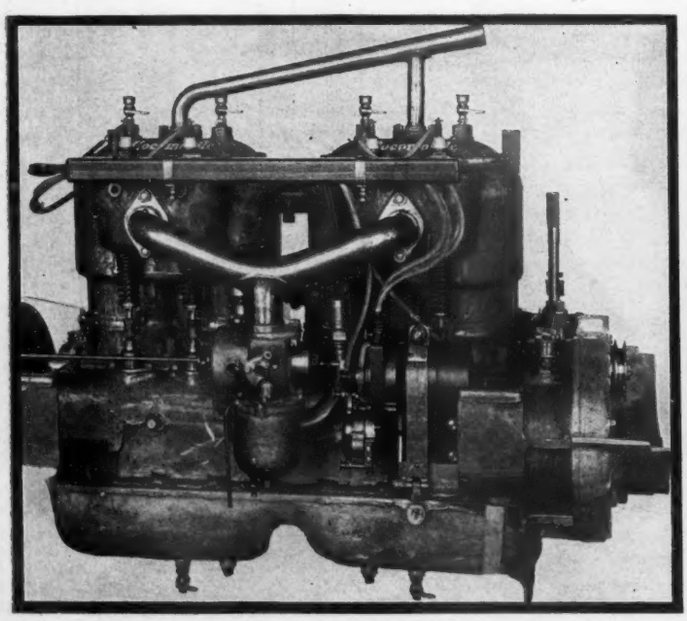


FIG. 2—LOCOMOBILE FOUR-CYLINDER MOTOR FOR 1911

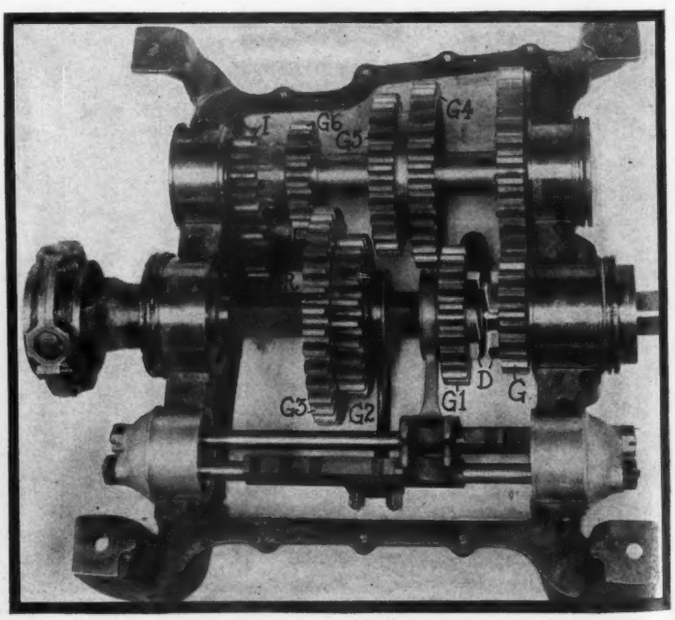


FIG. 3—SELECTIVE GEARSET IN LOCOMOBILE CARS

SHAFT-DRIVE FOUR IS RETAINED FOR 1911

supporting arms and passing underneath the case.

The intake manifold Fig. 1 consists of two branches M diverging from the top of the carburetor, there being no vertical pipe rising from the mixing chamber. The branches M lead to the front and rear cylinder castings and in addition there is the loop MI, which connects from each branch M to the center cylinder casting, this design giving an equal distance of travel for the mixture from the carbureter to each cylinder. Carburation may be called the bugbear of the six-cylinder engine, and in this case is used a single-jet carbureter of unusual construction in which the tendency of the ordinary automatic air valve spraying the carbureter to dilute the mixture excessively in high speeds is overcome by increasing the gasoline supply at high speeds rather than by strangling the air supply. The auxiliary valve has a light spring for low speeds, and a stiffer and shorter spring which does not take hold until the valve has begun to open. To facilitate starting, the valve is held shut by increasing the tension of its springs by means of a lever on the dash. An accelerator is provided in addition to the usual lever on the steering wheel and independent of it. In addition to the waterjacket around the spray passage, the primary air stream is heated by being drawn from an air passage around the exhaust manifold, this precaution being found desirable in view of the low grade of gasoline now usually obtainable.

Hand in hand with carburation goes the valve system employed on the motor. Using T-head cylinders places the valves on opposite sides, which permits of ample valve diameter. Valve noise is reduced by embedding fiber washers in the tops of the valve-lifters. By accurate workmanship a small and uniform clearance is obtained between the tops of the lifters and the ends of the valve stems on all cylinders, the measurement being a few thousandths of an inch. The timing gears within the crankcase housing at the forward end are of cast iron, but steel pinions are used on the crankshafts as well as for driving the magneto and pump.

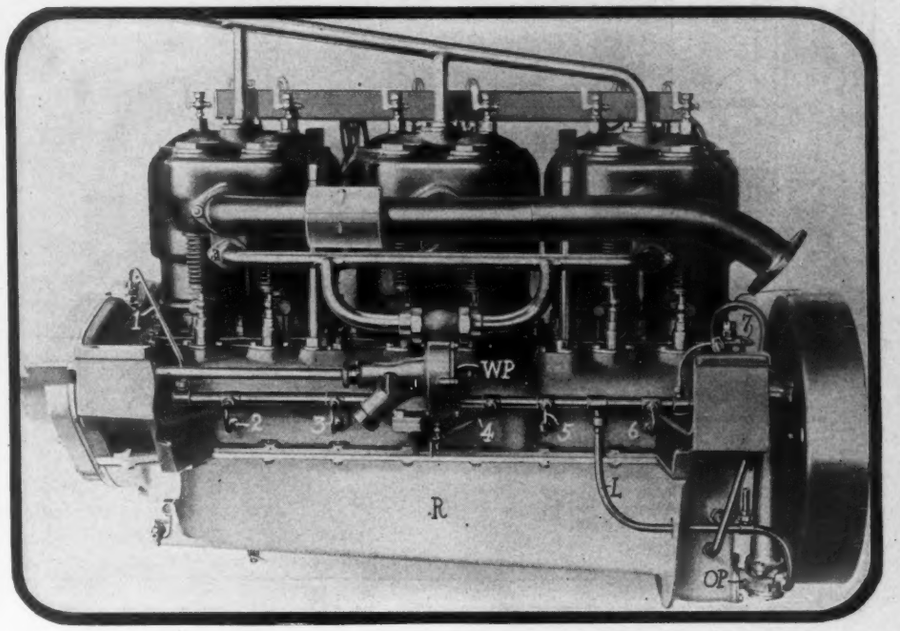


FIG. 4—CIRCULATING OILING SYSTEM ON LOCOMOBILE SIX-CYLINDER MOTOR

The circulating oiling system used on this new six-cylinder motor is deserving of study in that it aims at reducing the amount of oil that is churned up in the splash system, thus increasing the useful life of the lubricant. There has been a general tendency to eliminate the amount of oil used by getting the proper amount of lubricant in the proper place. How this is done in the Locomobile will be seen. Fig. 4 shows the externals of the oiling system, comprising the oil reservoir R in the lower half of the crankcase, the gear oil pump OP at the rear end; the oil lead L from the pump to a horizontal pipe along the side of the crankcase from which are six branches 1, 2, 3, 4, 5 and 6; to six small oil troughs, one for each connecting rod. There is a sheet steel false bottom S Fig. 8, located just low enough to clear the cranks and lower ends of the connecting rods. This carries the six troughs, 1, 2, 3, 4, 5 and 6. On each connecting rod cap is an integral scoop which dips into the oil in the trough, creating the splash and forcing oil through the scoop and connecting rod cap to the connecting rod bear-

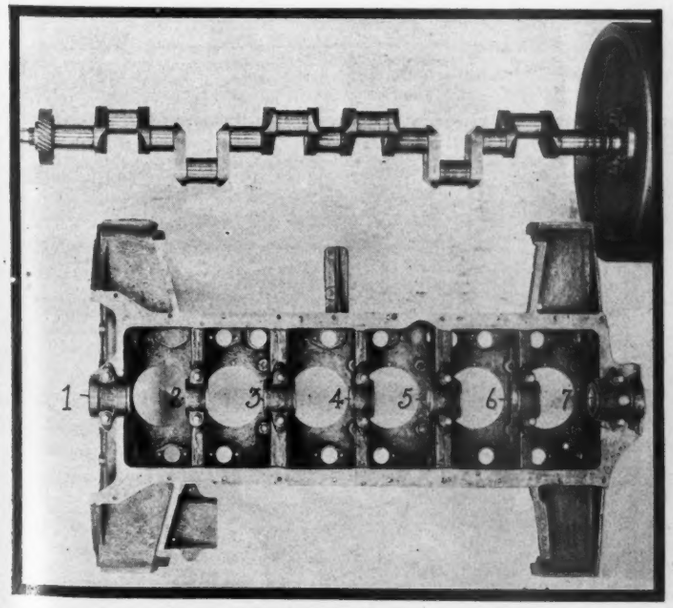


FIG. 5—SEVEN-BEARING CRANKCASE OF GOVERNMENT BRONZE

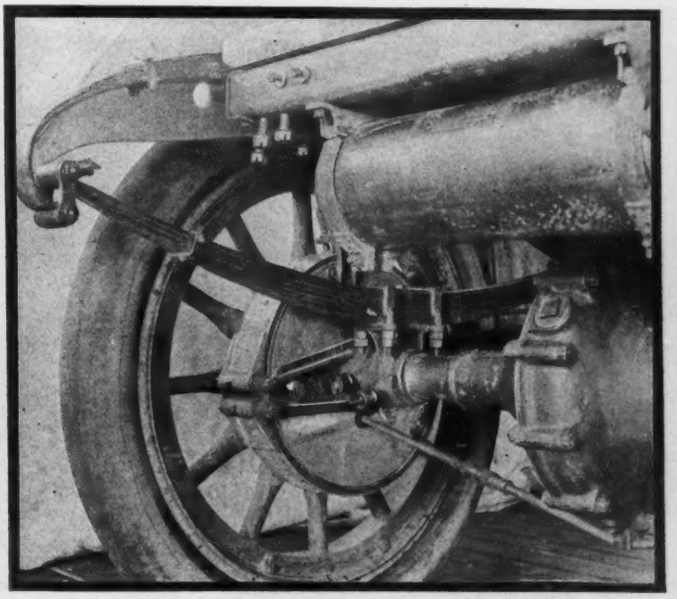


FIG. 6—LOCOMOBILE BRAKES AND REAR AXLE

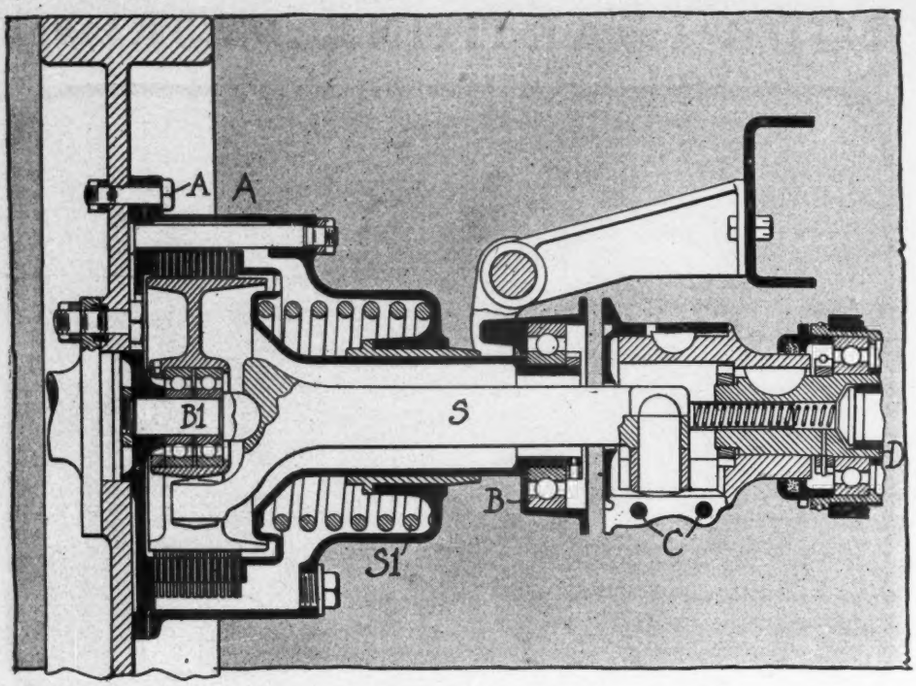


FIG. 7—MULTIPLE-DISK CLUTCH ON LOCOMOBILE SIX

ing. The surplus oil overflows and drains back into the reservoir through a large wire screen.

In Fig. 11 are shown the details of the oil pump with its two gears driven through a vertical shaft which takes its drive from the camshaft C through spiral gears. The screen G appears and to the left is a float F which carries an indicator I to show the level of oil within the reservoir. By means of a removable screw cap FI this float can be removed if need be; and a similar cap GI is placed beneath the oil screen. These are accessibility features which are worthy of note. There is a pressure gauge on the dash to show that the oil pump is working.

The oiling system in this new six goes still further in that oil is fed direct to the timing gear case at the front end of the motor, the company preferring this to packing the gears in grease, the reason advanced being that the tendency of the grease to work back into the crankcase and so foul the pistons is eliminated.

The ignition system already has been referred to. It is a Bosch dual system using but a single set of plugs. The magneto is mounted to the fore in the rear of the right front motor leg and the high-tension leads are carried above the cylinder heads in a neat tubing B from which short lengths of cable connect with the six plugs. There is the battery with the dash coil for starting purposes.

Fig. 7 shows the constructive details of the multiple-disk clutch. It contains forty-three steel disks lubricated with a half-and-half mixture of kerosene and cylinder oil. One set of disks is in connection with the clutch shaft S and the other attaches to the flywheel through long bolts which are in the clutch housing, which housing is connected to the flywheel through the bolts A. A single spring is used for engagement and it is entirely enclosed. A neat detail is the use of a double ball bearing BI which supports the carrier for one set of disks on the continuation of the crankshaft.

Transmission from the clutch to the gearset is through the shaft S, which has a semi-universal joint at its ends. The forward universal is contained within the clutch and the rear universal drives the clutch pinion D through a taper fit and Woodruff key as shown. The large ball bearing B surrounding the clutch shaft acts as a thrust bearing to withdraw the clutch. When in action, however, the clutch thrust is self-contained. This clutch can be removed bodily without disturbing either the engine or the gearbox by taking out six bolts A holding the clutch housing to the flywheel web and at the same time undoing four bolts holding the sleeve surrounding the rear universal joint of the clutch shaft. The universal is of the slotted-jaw type, and when the sleeve around it is removed the clutch shaft is simply slipped out laterally between the jaws.

The four-speed selective gearset does not differ from past Locomobile design and has both shafts carried on Hess-Bright and F and S annular ball bearings. It is illustrated in Fig. 3 in which the master pinion G is shown with the forward sliding unit GI immediately in rear, the adjacent faces of these gears having clutch teeth D which are engaged for direct drive. The second sliding unit is made up of two gears, G2 and G3. The position of the reverse gear R in the base of the case appears. On the secondary shaft are four gears; I which is constantly in mesh with the reverse, and G6, G5 and G4, which

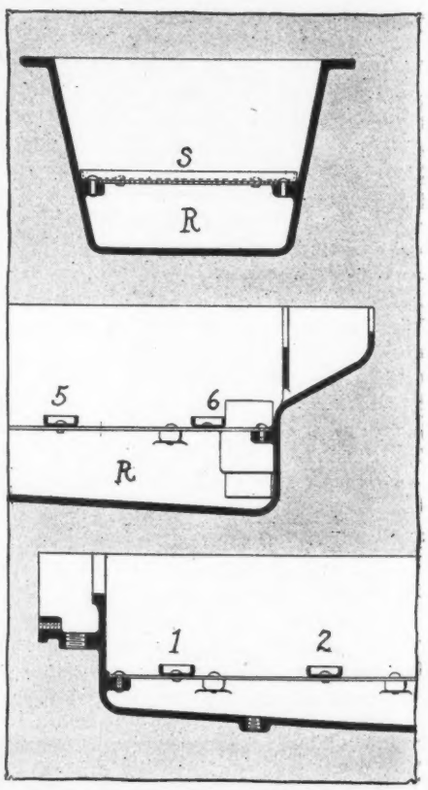


FIG. 8—CRANKCASE OILING DETAILS

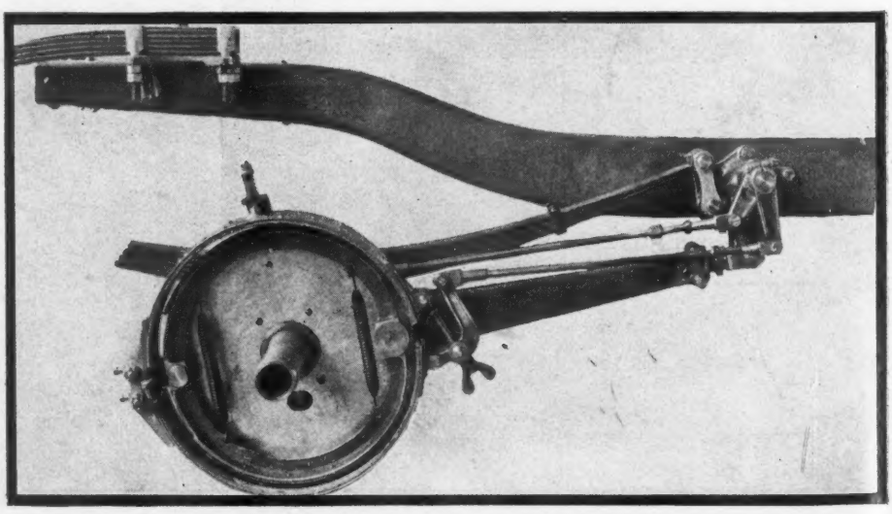


FIG. 9—THE RADIUS RODS SUPPORT THE BRAKE DRUMS

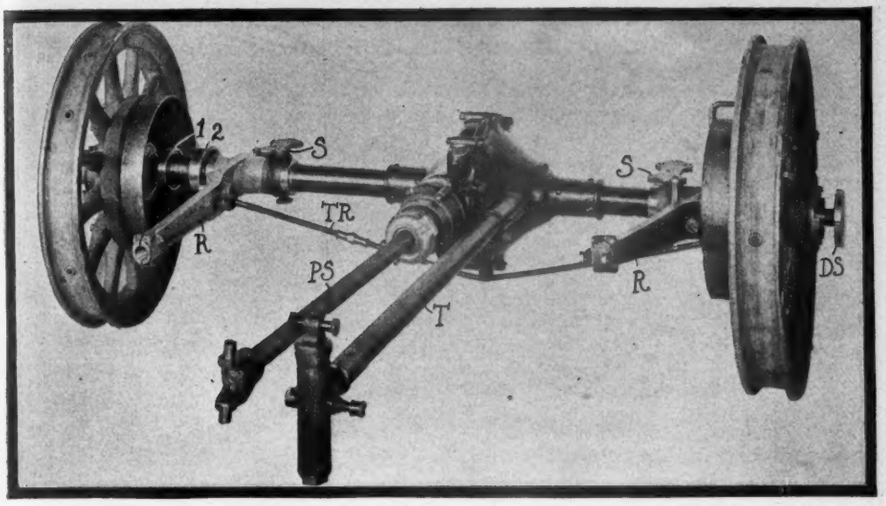


FIG. 10—DETAILS OF LOCOMOBILE REAR AXLE SYSTEM

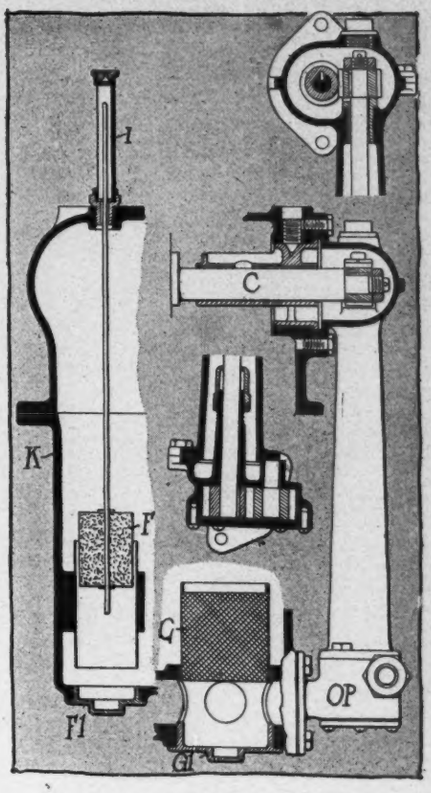


FIG. 11—LOCOMOBILE OIL PUMP DETAILS

mesh with corresponding gears on the mainshaft for the three indirect forward speeds. The ball bearing on the mainshaft adjacent to the propeller shaft is of unusual size to enable it to carry easily the extra duty imposed by the angular movement of the propeller shaft.

The propeller shaft PS Fig. 10 employs one universal joint at the forward end and a combined universal and slip joint at the rear end. The universal is of Locomobile design, having a split ring instead of the more usual cross. It is packed in thin grease with a casing around it and requires very little attention. The slip joint at the rear end is of the slotted-jaw type and is held together by a sleeve with a metal grease protector, and by removing the sleeve the shaft is easily taken out.

The rear axle construction in its general assembly is shown in Fig. 10, which group includes the radius rods R which are revolubly mounted on the axle housing so that the entire strain of propelling the car is transmitted from the axle to the frame through these members and not through the springs. In like manner the braking effect is exerted through these instead of through the springs. These rods are swiveled at their front ends to avoid straining on rough roads and form supports for the internal and external brakes as shown in Fig. 9. The axle housing is supported by a truss rod TR; DS shows the integral clutches on the end of the axle drive shafts; S indicates the revoluble spring seats; and 1 and 2 the ball bearings carrying each rear wheel. Fig. 12, a section of the axle, shows that the shaft carrying the pinion P is supported on two ball bearings 3 and 4, both of generous size, with a ball thrust bearing TI located between them. This allows of the bearing 3 being much larger than it could if located in rear of the pinion. The pinion has a taper fit on its shaft, the angle of taper being so slight as to give a very strong grip. A Woodruff key is also used. The axle shafts DS may be withdrawn as in any floating construction and have the inner ends squared where they enter the differential bevels, the outside ends being upset to form the jaw clutches DS Fig. 10 for engagement with the wheel hubs.

The method of adjusting the bevel gears is interesting. In some factories it is the practice to provide no adjustment at all. In the Locomobile factory the bevel pinion shaft is assembled as a unit with its bearings 3 and 4, and the differential is assembled as another unit before it is put into the axle. These units are so arranged that their positions can be adjusted from the outside after the axle housing is put together, the evidence of correct alignment being absence of noise when running. Since the position of each unit is determined by the position of the thrust bearings behind the bevel pinion P and gear, the result intended is obtained by seating each thrust bearing against an adjustable shoulder. In connection with the bevel pinion thrust bearing a bronze sleeve H is used, which surrounds the ball bearings and is threaded in a steel ring G secured by four studs E to the axle casing. The sleeve is adjusted by applying a spanner to its outer end, and when adjusted it is held in position by the set screw F.

In connection with the differential thrust bearing a shorter bronze sleeve B is used, which surrounds the thrust bearing and adjacent large radial bearing. The sleeve B is stationary after it is assembled, and is not turned in order to adjust the gears, but it is threaded internally to hold a

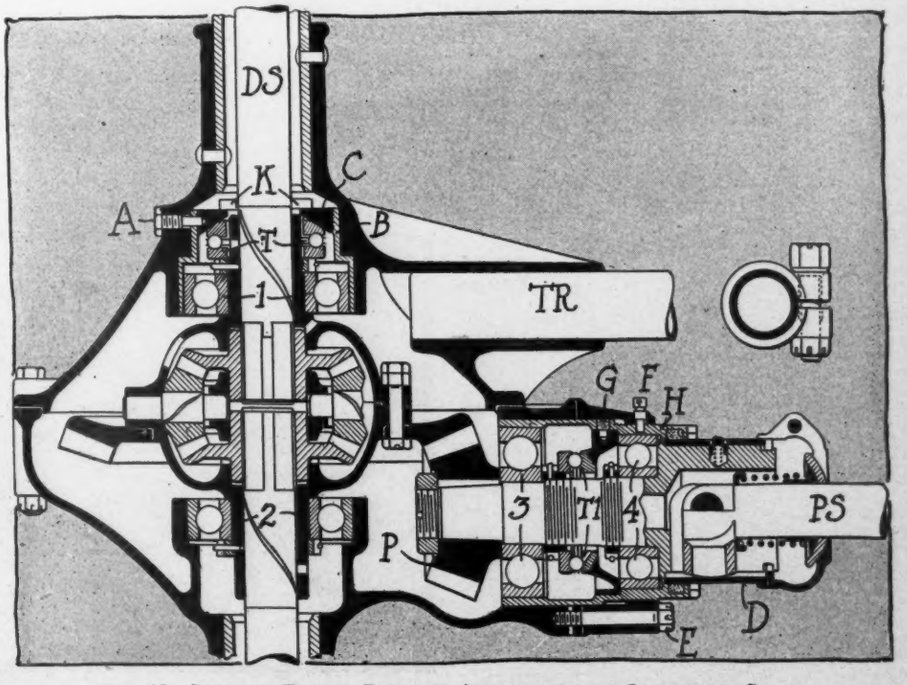


FIG. 12—SHOWING THRUST BEARINGS ADJUSTMENTS ON LOCOMOBILE CARS

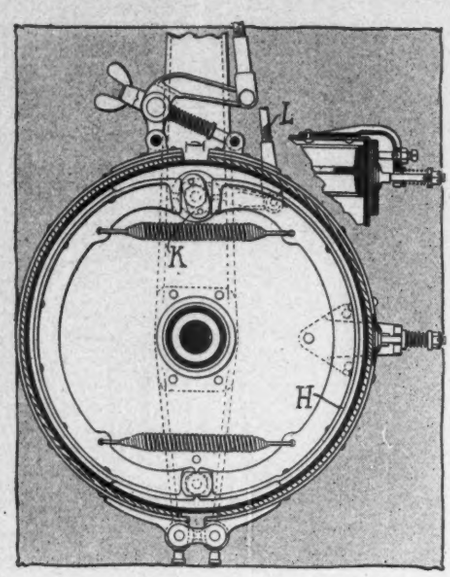


FIG. 13—LOCOMOBILE BRAKE DETAILS

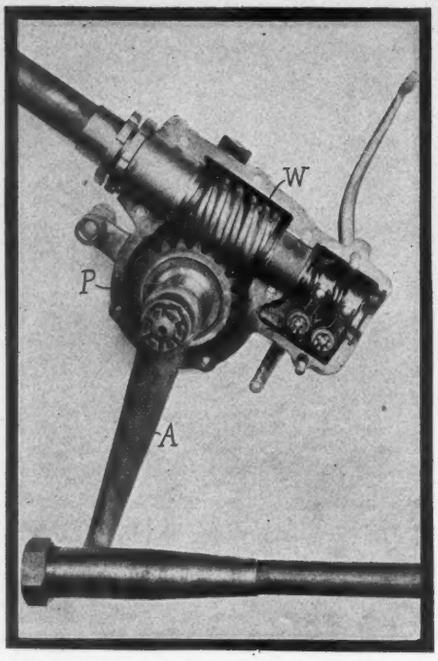


FIG. 14—LOCOMOBILE STEERING GEAR

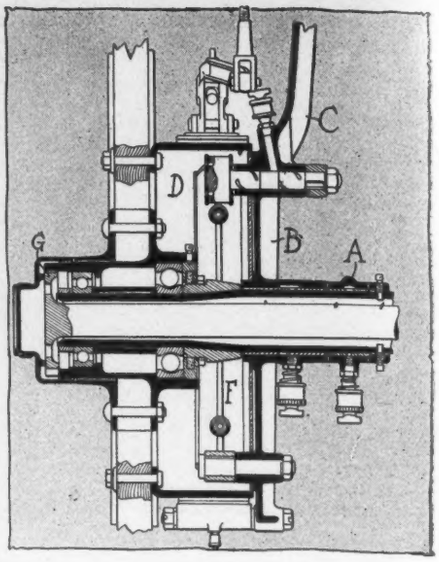


FIG. 15—LOCOMOBILE WHEEL BEARINGS

steel plate C against which the thrust bearing seats. This plate can be rotated by means of a tubular spanner inserted from the end of the axle after the hub cap has been removed and the axleshaft withdrawn, this spanner locking with the teeth K. After adjustment the thrust plate and sleeve are both located by the long set screw A.

The details of the housing construction of the rear axle appear in Fig. 16. The axle tubes are forced by hydraulic pressure into the bell-shaped halves H and HI of the differential housing and are riveted for additional security. Brazing is not used.

Brake details are shown in Figs. 9, 13 and 15. There are two sets, internal and external; the internals, for emergency uses, being narrower than the externals, used for service work and operated by foot. Both have reinforced asbestos surfaces. The foot brakes are adjusted by outside wing nut as shown in Fig. 13, and the internal set are expanded by cams K and adjusted by means of threaded tension rods L which operate them.

The steering mechanism is shown in Fig. 14. The steering column carries a standard worm W which meshes with a pinion P, secured to the steering arm A. The steering wheel is a bronze spider with a hard rubber grip. Before dismissing this cursory consideration of the running gear parts, attention is directed to the care bestowed on the lubrication of many of the parts. The steering gear is supplied with a large grease cup; another grease cup feeds the pump bearings; small grease cups are supplied everywhere in place of oilers about the spring shackles, steering connections, radius rod bearings and other places. In all, some twenty-eight grease cups are used. One filling of these grease cups is said to be sufficient for a month's use.

Practically all of the foregoing description applies to the four-cylinder car excepting that a mechanical oiler is fitted to the motor crankcase on the outside and is driven from an extension of the exhaust camshaft. The clutch on this model is a leather-faced cone type with springs under the leather to ease the engagement. This model uses a four-speed gearset and the main details of the rear axle as well as gearset are alike. The six-cylinder chassis has a 135-inch wheelbase with 36 by 4-inch front tires and 37 by 5-inch rear sizes. On the six-cylinder roadster models the rear tires are 36 by 4½ inches. This chassis is fitted with touring, torpedo, limousine and landaulet body types, either with or without fore doors.

The chassis measurements of model L begin with a 120-inch wheelbase, and 34 by 4½-inch tires all around.

MOTOR CAR LITERATURE

The W. A. Paterson Co., Flint, Mich., has issued a conventional catalog featuring its 1911 Paterson 30. Seven full-page illustrations show the Paterson 30 in its different models.

Another 1911 catalog is that of the Enger Motor Car Co., Cincinnati, O., in which is described and illustrated the several models of the Enger car. The usual specifications are included.

"Information Packard Motor Cars 1911" is the title of the latest literature from the Packard Motor Car Co., Detroit, Mich. The first eighteen pages are devoted to illustrations of the Packard models, with general information pertaining to them. The parts price list covers forty-eight pages of the book. A complete diagram showing the lubrication system with complete oiling directions are given, followed with a resume of the laws relating to touring in this and foreign countries, and some general touring information covering preparation, customs, etc.

The Oakland Motor Car Co., Pontiac, Mich., has issued an advance folder announcing the Oakland models for the coming season.

Catalog No. 12, Department C, from the Dover Stamping and Mfg. Co., Cambridge, Mass., lists and illustrates its funnels, combination measures and funnels, oilers, garage pails, etc.

The Haynes Automobile Co., Kokomo, Ind., is mailing to the trade an advance folder announcing the Haynes models for the 1911 season.

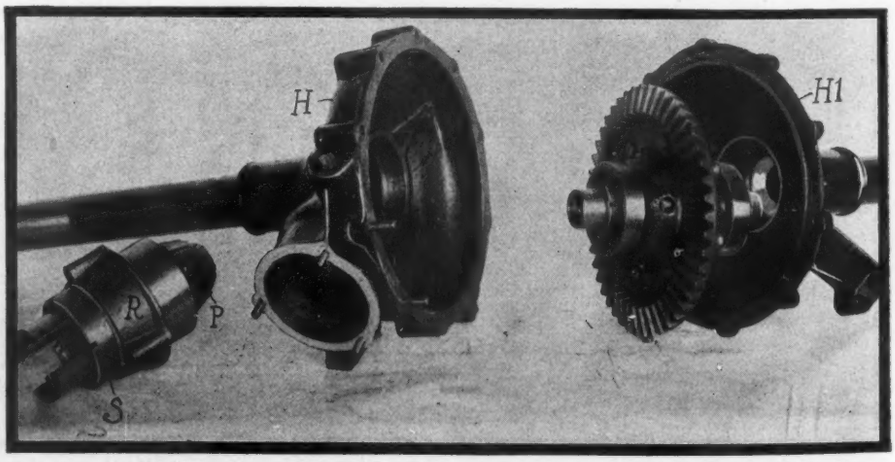


FIG. 16—PINION REMOVED AND AXLE PARTED IN LOCOMOBILE CHASSIS

Current Motor Car Patents

To Protect Radiator—No. 976,193, dated November 88; to Vincent Link, Detroit, Mich.—This patent relates to a design or arrangement of the cooling system of a motor vehicle whereby the radiator of the cooling system may be removed from the front end of the car to a more protected position behind the motor. As illustrated in Fig. 1 the radiator R, generally to be found on the dash D, where it is most liable to injury in traffic, is here located in a very safe position under the front seats of the vehicle body. For generating the air currents required to absorb and carry off the heat from the radiator, side-intake rim-delivery fan blades are attached to the rim of the flywheel, and a casing encloses the flywheel and directs the currents of air through the radiator.

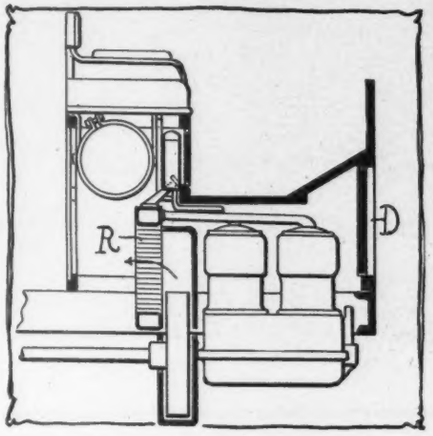


FIG. 1—RADIATOR UNDER SEAT

Priming Device—No. 975,639, dated November 15; to Bernard Ruckdeschel, Philadelphia, Pa.—In order to facilitate priming the cylinders of an internal combustion motor such as is in motor cars, without making it necessary to raise the hood and squirt a little gasoline into each of the cylinders individually, a device such as is illustrated in Fig. 4 has been invented. It includes a hand pump P attached to the dash by means of which on the up stroke fuel may be drawn from the tank T into the chamber C; and on the down stroke, when the valves V of the respective cylinders D of the motor are opened simultaneously by means of the rod R, the fuel in the chamber C is equally distributed to the cylinders.

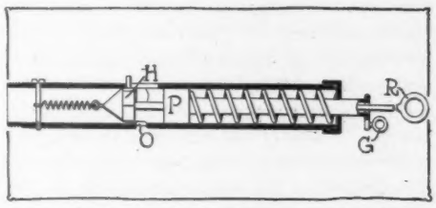


FIG. 2—COMBINED WHISTLE AND CUT-OUT

Combined Whistle and Cutout—No. 976,008, dated November 15; to Fred Grant Terwilliger, Siegfried, Pa.—This patent relates to a combined whistle and cutout adapted for attachment to the exhaust pipe of motor cars, etc. It comprises a hollow cylindrical body, having a series of openings O, Fig. 2, in its sides, a plug H arranged to operate within the body and having the end facing the inlet made conical and its sides flattened adjacent the respective openings of the body; a piston P also mounted within the body and adapted to close the openings in the sides thereof, and suitable means for controlling the operation of these features. Provisions are made to prevent the turning of the plug and limiting its movements, and there is a spring normally exerting force upon the plug to hold it in a given position. The rod R connected to the plug passes through the sleeve G, which operates the piston, and a spring for the purpose of holding the piston in a position close to the openings O is furnished.

For Turning Headlights—No. 976,468, dated November 22; to Frederick Kohout and Robert C. Langley, Dallas, Tex.—As illustrated in Fig. 3, the invention to which this patent relates comprises a combination by means of which the headlamps of a motor car may be automatically turned as the steering wheels of the vehicle are turned, so that night driving may be greatly facilitated. The lamp brackets B are designed to revolve upon the bases S, which are secured to the vehicle frame F. An arm A of the brackets supports a shaft T on which a rocker arm R is mounted, a connecting rod D communicates between the steering arm E and the rocker arm and resilient links L are provided between the rocker arm and the arm V which is integral with the revolving portion of the lamp bracket. This type of revolving lamp-bracket design has an advantage over some of the other devices of a similar nature, in that it is independent of the action of the springs.

Spark Plug Design—No. 976,158, dated November 22; to George E. Edick, Manasquan, N. J.—The spark plug to which this patent relates differs chiefly in that the central or axially disposed insulated electrode is a tube with a valve at its upper end; and on removing this valve gasoline may be forced through the plug for the purpose of priming the motor or cleaning the points of the spark plug. The design is indicated in Fig. 5, the shell S and insulation I is conventional, the terminal of the ignition cable B may be secured to the plug by having the cap C screwed down upon it, or if of the more readily removable forked type it may be slipped into the annular groove G in the head of the valve screw S. The hollow passage through the insulated electrode E is flared out at its upper end to form a conical seat for the end of the valve screw S, and directly opposite the opening at the other end of the passage the ground terminal G of the spark plug is situated. Thus, by removing the valve screw S, introducing the nozzle of a priming can, and forcing a stream of gasoline into the cylinder of the motor, the spark points would be cleansed of any accumulation of oil or dirt thereon.

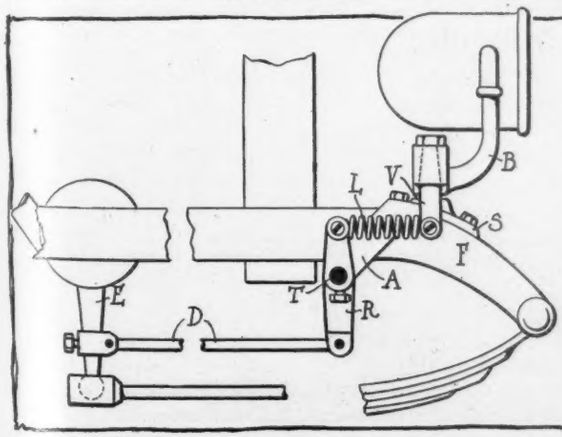


FIG. 3—MEANS OF TURNING HEADLIGHTS.

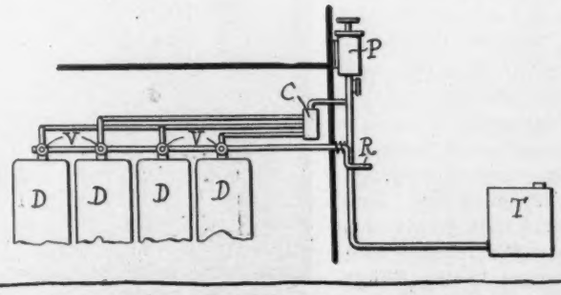


FIG. 4—MOTOR PRIMING DEVICE.

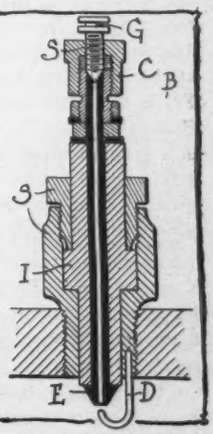


FIG. 5—SPARK PLUG

CHASSIS DETAILS OF 1911 CARHARTT MODEL 35

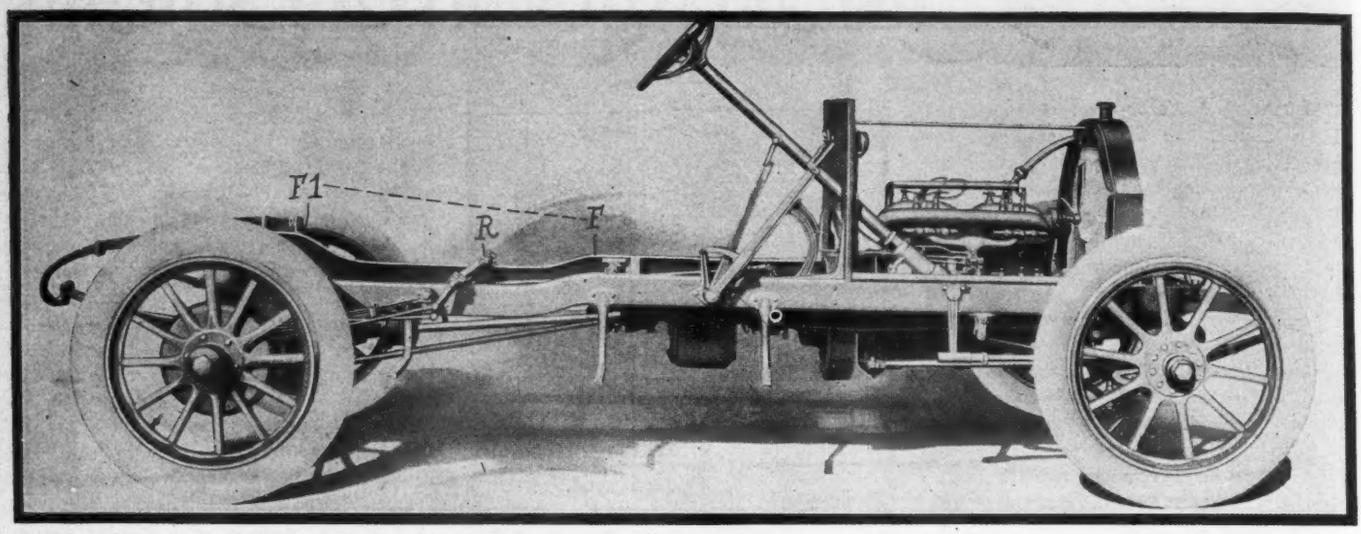


FIG. 1—CARHARTT CHASSIS EMPLOYING A DOUBLE-DROP FRAME CONSTRUCTION

IN its model 35 for the 1911 trade, the Carhartt Automobile Corporation, Detroit, Mich., offers a chassis carrying a variety of bodies including a five-passenger touring car, a two-passenger runabout, a fore-door traveler model, a limousine, landaulet, coupe, and four-passenger demi-tonneau. This chassis, on which all of these body types are carried is illustrated in Figs. 1 and 3. Fig. 3 shows it to be conventional design, with a four-cylinder motor and selective gearset carried as separate units and mounted on subframe members. The rear axle is a floating Timken construction, that type in which a pressed steel housing is made use of and in which the differential is carried in a separate housing bolted to the central expansion of the axle casing. Between the selective gearset and the rear axle is the propeller-shaft with two universal joints, and there is the usual V-shaped torque rod which parallels the propellershaft. In Fig. 1 is shown the carefully worked frame construction, the side members of which are stamped with a double drop between the points F and F1, this construction resulting in the lowering of the doors for the touring cars as well as the closed types, and eliminating the necessity of a step on the running board. In addition to this double drop the side members are offset at the dash, Fig. 3, at which point, namely, F2, is the maximum width of the flanges. From the point F2 to F3 at the rear there is a gradual tapering of flange width. The sub members which take the motor and gearbox load are supported from two cross pieces of the main construction.

Supporting this frame work in front is a set of semi-elliptic springs 38 inches in length, and in rear the support is through three-quarter springs 48 inches long. Both sets of springs are fitted with grease cups on the shackle bolts. The forward axle is an I-beam construction having Elliott type of jaw ends. The axle is dropped between the steering knuckles and the spring seatings and between these spring seatings it is practically horizontal save for a slight depression in the center. The tie rod T between the steering knuckles is carried in rear of the axle and the steering gear comprises a worm operating in conjunction with the sector which carries the radius arm. Steering arms are dropped forgings and all steering connections are supplied with grease cups.

The Carhartt motor is best illustrated in Fig. 2. It consists of L-type of twin castings with 4¼-inch bore and 4½-inch stroke. Carrying both sets of valves on the left side calls for the use of a single camshaft, which is formed with integral cams. The crankcase is made of an aluminum alloy and is cast in upper and lower halves, the upper half carrying the three crankshaft bearings and having the four supporting arms which extend to the subframe members. The crankshaft bearings are made of Parsons white brass. The shaft itself is an alloy steel forging given the usual heat treatment and having all its bearing surfaces ground. The connecting rods are steel forgings carrying Parsons white brass bushings at the lower and special bronze bushings for the wrist-pins. Intake and exhaust valves are made interchangeable and have the nickel steel heads electrically welded to the carbon steel stems.

The oiling system employed in the Carhartt is best described as a splash system with the crankcase having four compartments in which an oil level is maintained, and into which the lower end of the connecting rod splashes. Beneath these four

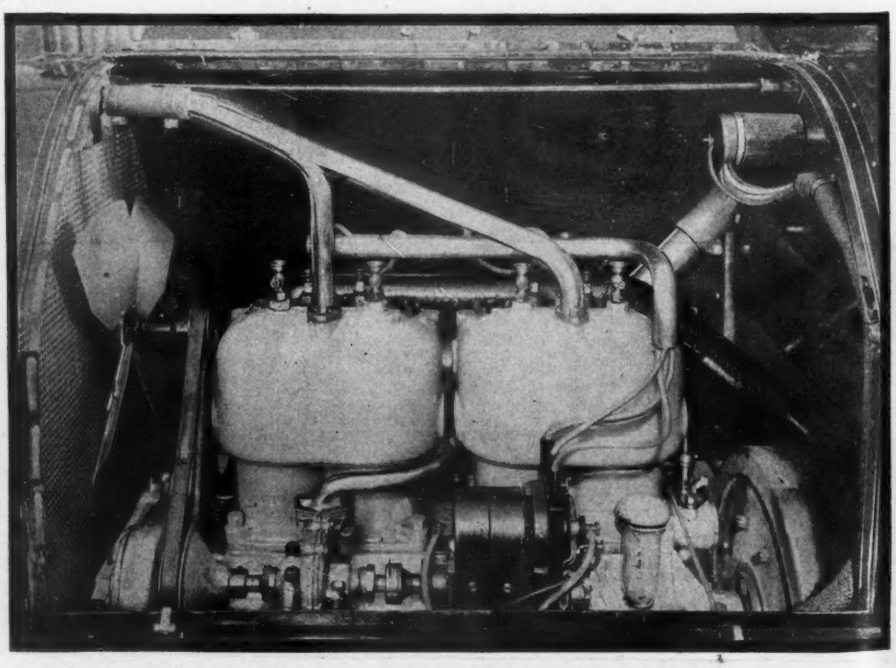


FIG. 2—MAGNETO AND PUMP SIDE OF CARHARTT MOTOR

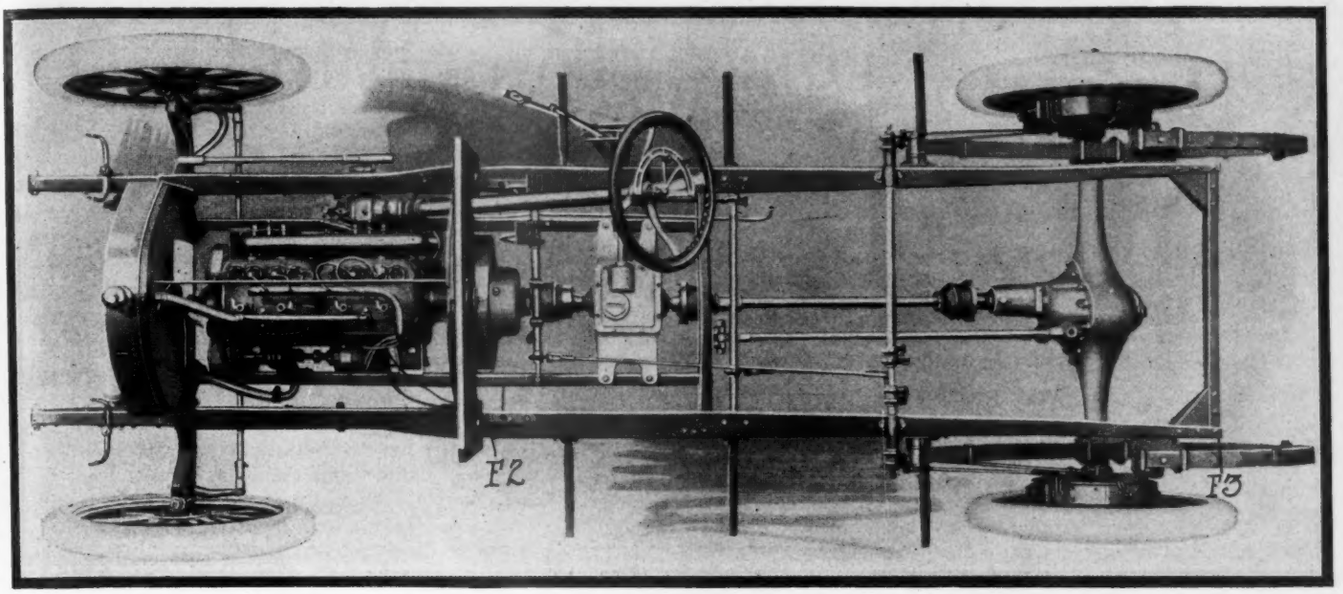


FIG. 3—THE CARHARTT FRAME MEMBERS HAVE A MAXIMUM WIDTH AT F2 AND TAPER REARWARD

compartments is a reservoir in which the oil supply is carried. A plunger pump located at the right side of the motor and driven from the camshaft, delivers the oil to the motor parts. The amount of oil pumped is regulated by the adjustment of the stroke. On the side of the crankcase is a glass gauge which shows the oil level within the case.

The cooling system is made up of the usual integral waterjackets, a centrifugal pump and a honeycomb type of radiator. Assisting is a belt-driven fan carried on ball bearings. The usual facilities for adjustment of the tension of the fan belt are provided.

In the ignition system are combined a Bosch magneto, located on the left side; a Bosch cylindrical coil carried beneath the bonnet on the dash, as shown in Fig. 2, and the battery. This makes up the usual Bosch dual system, the battery being used for starting only. As illustrated, the high-tension cables from the magneto are carried in a protecting tube over the tops of the cylinders. Magneto is readily demountable in that there is a jaw coupling between it and the cylindrical water pump. On the dash is carried a specially-constructed hand and lock switch.

In the transmission system the employment of the multiple-disk clutch comes first. As shown in Fig. 3, this clutch is carried in the tubular housing on the rear face of the flywheel, the disks operating constantly in oil. Between the clutch and the gearbox is a universal coupling. Fig. 4 shows the leading designs of the gearset, which follows the vertical type of design, namely, that in which the main and countershaft are in the same vertical plane. The mainshaft appears in the illustration and carries on it the two sliding units. The sliding units on the left also serve to engage with an internal gear for direct drive, as well as meshing with a corresponding gear on the secondary shaft for intermediate. Both shafts and all the gears are made of alloy steel. Imported ball bearings are used throughout. A compact housing of the shifter rods and shifting yokes is arranged for within the case. As this illustration shows, the gearbox is a one-piece aluminum casting with an inspection plate serving as the cover. With this plate removed, as illustrated, the contents of the case are accessible.

The details of the Timken floating rear axle employed on this car are well known to readers of Motor Age. This axle housing is a steel stamping made in halves, which are electrically welded together. Being a floating construction, this housing carries the complete car load. The differential is carried on short-series Timken bearings, and with the driveshafts removed the differential can also be taken out without having to as much as jack up the rear wheels. This axle carries a double set of brakes, the service set being external members, whereas the emergencies are expanding shoes, both sets operating upon the same drum.

The bodies used on the Carhartt cars are metal and wood construction with hand-buffed leather used in the upholstering. The five-passenger car carries the usual tonneau equipment. The standard wheelbase is 118 inches and 34 by 4 inch tires are fitted. The runabout is identical, excepting that the driver's seat is placed further to the rear and the steering column more inclined. The gasoline tank is placed back of the seat at such height so that a gravity system is used. The coupe, limousine, landaulet and torpedo are fitted with the same chassis.

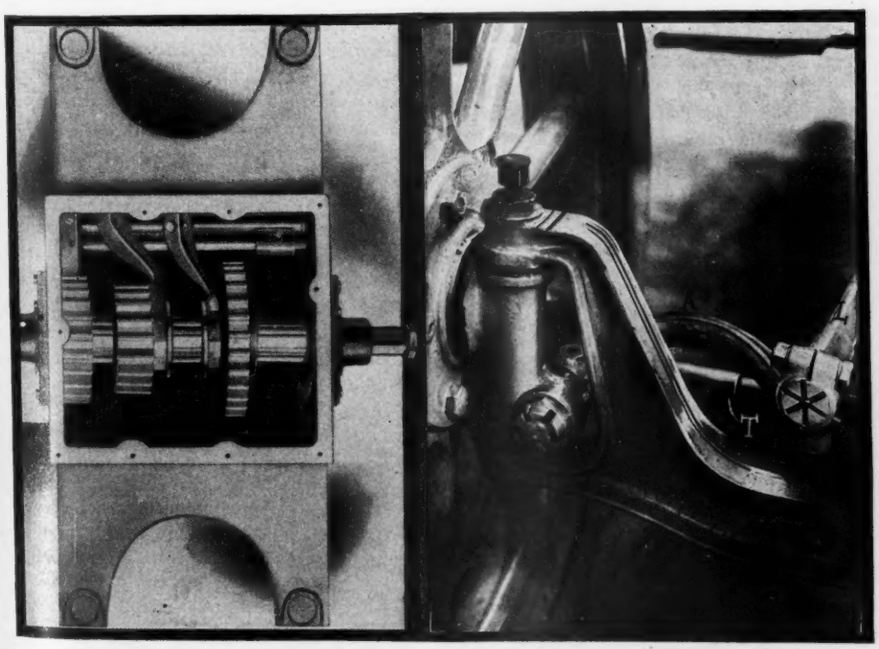


FIG. 4—CARHARTT GEARSET

FIG. 5—CARHARTT STEERING DETAILS

From the Four Winds

MRS. H. W. CURTIS, CHICAGO'S WOMAN CHAUFFEUR

CHICAGO'S Woman Chauffeur—Mrs. H. W. Curtis, of 5127 Indiana avenue, Chicago, has applied for a chauffeur's license and will drive a Babcock electric, which she will put into rental service.

Springfield's Opportunity—The Commercial Club of Springfield, Ohio, has extended an invitation to the Automobile Club of Springfield to share its club rooms. The board of governors of the motor club will be called together soon to act on the invitation. E. S. Kelly is president of the motor club.

Asks Uniform Laws—In order to have its laws more uniform with those of other New England states, a bill has been introduced to the Vermont legislature providing for a change in the rating of the power of motor cars so that it will conform to the Bay State, New Hampshire, Connecticut and New York ratings. Other changes in the law will also be made during the present session, but no radical legislation will be passed it is thought.

Improving Omaha Speedway—The officers of the Omaha Speedway Association already have started men to work on the 1-mile dirt speedway. The track was a new one this year, work not having been started on it until summer, but it was put in such good shape, in the short time, that three very successful meets were held, and good time was made. However they have workmen on the track now, banking the ends higher, leveling it off and improving it generally. It is hoped to have a big meet early in the year. The street car company last summer built a track within ½ mile of the grounds, and now the motorists are endeavoring to get the company to extend this line to the gates of the speedway, before the next meet. Arrangements are also being made with the railways to run out specials on the tracks which run close to the west entrance.

After Caley's Job—Ex-State Senator John M. Thompson, of Mount Gilead, Ohio, has filed an application with Charles H. Graves, democratic secretary of state-elect, for the position of registrar of the Ohio motor car department to succeed Fred H. Caley.

Dayton Books a Show—At a meeting of the board of directors of the Dayton Automobile Club recently it was decided that the annual show, to be given under the auspices of the club in Dayton, Ohio, should be held the last week in February. Memorial hall has been secured for the occasion by the club.

Floods Threaten French—There is every indication that French manufacturers will be as seriously affected by floods this winter as during last season. Even now, at the beginning of the winter, the Seine river is in an abnormal condition, and although none of the factories is yet flooded, it only needs another foot rise to bring the water to their doors. The situation is rendered serious by the fact that practically nine-tenths of the car factories of France are grouped along the banks of the Seine river, just below Paris, that the river and all its tributaries are high and still rising, and that the ground is so sodden by several wet seasons that it has no further powers of absorption. The firms most seriously threatened are Brasier, Renault, Darracq, Charron, Gnome, Unic, de Dion-Bouton, Bayard-Clement, Continental tires and Bosch magneto. Among the few altogether out of reach of the floods are Panhard-Levassor and Delahaye, both located on high ground within the city of Paris.

Right Wheel to Curb—An ordinance has been enacted by the city council of Columbus, Ohio, to compel all motorists to turn the right side of their cars to the curb when a car is left standing. A stiff fine has been provided for violations of this traffic rule.

Students Studying Roads—The University of Washington, located at Seattle, has recently established a material testing laboratory where all road materials will be tested free of charge for counties and municipalities located in this state, and only a nominal charge will be made outside cities. This means that only the best materials will be used for road construction that is planned for the future.

Milwaukee Legislation—The Milwaukee common council's committee on judiciary has recommended the ordinance providing that all drivers of vehicles must stop after injuring a person or running down anyone. The penalty for violation is a fine of from $5 to $50, with the alternative of imprisonment from 10 to 60 days or both. This is aimed at motor car drivers and is the result of an accident in Milwaukee recently. The committee has submitted two other ordinances affecting motorists to the city attorney, fearing unconstitutionality. One is to license chauffeurs and the other would make imprisonment a penalty for speeding and impose much higher fines than permitted under the existing ordinance.

Money Wasted on Streets—Charles A. Mullen, superintendent of street construction and maintenance, Milwaukee, Wis., has caused a sensation by declaring that approximately $1,500,000 has been wasted by the city of Milwaukee in the past in constructing macadam streets. Superintendent Mullen says twice as much crushed stone has been purchased as was needed, and the only reason he can see for this is to give quarry companies business. He declares that in most streets 10 to 12 inches of crushed stone have been used, when 6 inches is all that can be used to advantage. Anything put on the top of the 6 inches is worse than useless, he says. "That additional 4 to 6 inches of unnecessary material has cost Milwaukee about 30 cents a yard. At the end of 1909 in Milwaukee there were 293 miles of macadam and gravel streets. The wasted material represents a loss of $1,500,000," Superintendent Mullen says. He is in favor of using bituminous macadam on streets with light traffic and claims this will last

25 years, whereas ordinary macadam requires repair three years after it is laid. The cost would be only 30 cents more per square yard.

Another Tax Proposed—The Milwaukee county board has under consideration a resolution asking the legislature to permit Milwaukee county to establish a county motor vehicle license system, the license fee to be $25 and the proceeds to go into the highway fund. It is hardly believed possible that the legislature would permit this procedure, which would be illegal, if the state continued to license motor vehicles, on the ground that it constitutes double taxation.

State Roads Cost Money—Paul D. Sargent, highway commissioner of Maine, states that work has been done in Maine this year in building state roads in 475 cities and towns and that there has been employed doing this work a total of 9,500 men, at a total cost in wages of approximately $166,250. In addition to this item many teams have been employed, the cost of which was $76,000, making the total spent for labor on the roads during the year $242,250. During 1909 there was spent on the roads $278,500, but this year when the total expense is figured out it will exceed that sum.

Bulldog in the South—Entering upon its eighteenth thousand mile, the Abbott-Detroit Bulldog is rapidly approaching the south and a warmer climate, greatly to the delight of its crew, tired with bucking the snows of northern New York and the cold and rocky roads of Maine. Up to date the car has covered twenty-seven states and is entering into its 18,000 mileage without a puncture or a break-down of any kind. All along the route from Portland, Maine, to Baltimore the car and its drivers met with receptions at the hands of the city officials and club members, who have turned out to meet the tourists in great numbers. The run from Boston to Portland, Maine, and return, a distance of 239 miles, was made in a little over 14 hours.

Proposes Road Law—At a meeting held in Louisville, Ky., the good roads committee of the Kentucky Good Roads Association took important steps to secure better highways in the state. A law providing for modern public roads throughout Kentucky was outlined and unanimously approved by those present. The bill will be presented at the next session of the Kentucky general assembly. The features of the proposed law are those parts which provide for a state highway commissioner; a 5-cent tax to be levied upon each $100 valuation of assessable property; a county tax for the maintenance of new roads and highways after completion, the state to pay not more than one-half of the cost construction, the balance of the expense to be borne by the county wherein the roads are being made. The clause which limits the state to one-half the cost of construction is quite a departure from the first good roads laws that were drawn and submitted for passage. In the old law it was stipulated that no county would be allowed more than one-third of the cost of construction by the state.

Will Save Freight—The completion of the roadway through the Snoqualmie Pass, Wash., will do away with the necessity for motorists to ship their cars by freight from Seattle to Easton, at a cost of $35 per car. This is one of the roads fostered by the Pacific Highway Association.

Registration Record Broken—Previous records for motor car registrations have been broken in Indiana. So far this year the secretary of state has issued 10,400 tags, as compared with about 6,000 for all of last year. Of the total registrations from 800 to 1,000 have been for motor cycles. The registration does not have to be renewed, as in some states.

Club at Oregon, Ill.—The outcome of a very enthusiastic and energetic meeting of a large number of motor car owners resulted in the organization of the Ogle County Automobile Club in Oregon, Ill. A constitution and by-laws were adopted, and an effort will be made to better conditions for motorists in that vicinity. A. W. Brayton, of Mt. Morris, Ill., was elected president; W. P. Graham, of Rochelle, Ill., secretary and treasurer; and an executive committee of one from each township in the county.

Maine's New Club—Maine has at last come in and has a motor club. It was organized in Portland last Tuesday week as the result of personal efforts of J. Fortescue of the American Automobile Association. After explaining the need of an organization in the state, the only one in the union that had no club, Mr. Fortescue suggested that it would be better to have officers, none of whom was identified with the motor business. In accordance with this, the following men were elected: President, Dr. S. C. Gordon, of Portland; vice-presidents, L. A. Burleigh, of Augusta, and H. C. Chapman, of Bangor; secretary and treasurer, Walter B. Parker, of Portland; directors, Silas B. Adams, William N. Taylor, Elmer A. Doten, Philip J. Deering and Dr. John F. Thompson. Dr. Gordon is over 80 years old. In spite of that fact he is an enthusiastic motorist and a strong advocate of good roads.

Des Moines Show Dates—The Des Moines Automobile Dealers' Association has just announced December 7, 8, 9, 10 and 11 as the dates for its second annual show, which is to be held in the coliseum. Twenty-two dealers, presenting nearly every car sold in the central west, have been entered for space and already all the space available has been contracted for.

Nebraska Improvement—There has been an extensive movement on the part of the commercial club of Fremont, Neb., and county officials to improve the roads in that section of the state. The Broad street road north of the city has just been put in fine shape by the road gang of the Commercial Club, and arrangements have been made for keeping this well dragged. At present it needs still more dragging over the fills to make it good for motor cars, but this will be done at once. The Platte river road has been raised 3 feet, so that where before there was a rough, deep, sandy foundation, now there is a hard surface, excellent for traffic.

Milwaukee Expands—The Grand avenue boulevard extension project undertaken by the Milwaukee county board of supervisors about 2 months ago, has developed into a much more comprehensive scheme. The board at its last meeting unanimously voted to build a boulevard of parkway from the Grand avenue viaduct to the Wisconsin state fair park in West Allis, bordering on the western county limits. The first plan embraces a boulevard due west to the county limits from the viaduct, and the state fair park boulevard will be in the nature of a branch to the main boulevard. The work will be completed during 1912, grading having been begun on October 15 of this year. Owners of the land needed for the two parkways have agreed to share the expense of the improvement.

SCENE SHOWING FLOODED CONDITION OF PARIS STREETS

The Realm of the Commercial Car

ARMY TESTING TRUCKS

THAT Fort Snelling army officers believe they can save the government money by using motor trucks in place of mules in the service department was clearly shown last week. Tests will be made and the results reported to Washington, which, it is believed, will awaken the headquarters to the economy of the newer method of transportation. For the past 90 days Captains McArthur and Campbell have been in conference with H. E. Wilcox, of the H. E. Wilcox Motor Car Co., trying to persuade that company to furnish them with a truck to prove to headquarters at Washington the advantages gained by using motor-driven vehicles over mule teams. The company put one out at the fort last week with body specifications according to the requirements of the government. This car has been turned over to the board of investigation for experimental use. It will be used largely in the quartermaster's division and will make runs to St. Paul and Minneapolis.

The test will be on a scientific basis and an exhaustive report will be sent to Washington showing every comparative test possible. These reports will also be furnished to the H. E. Wilcox Motor Car Co. to be used in showing comparative costs which would otherwise entail a great expense. Tests will be made on hills, showing the exact percentage of grade, condition of roads, and on measured distances for speed, with maximum load and overload. Long hauls will be made for the quartermaster's division, for the cavalry and other departments, carrying the regular specified load or more, as would be required in active service.

It is safe to figure that one motor truck will take the place of three four-mule teams and cover three times the same distance in a given length of time. During times of peace the motor truck will only consume gasoline and oil when in actual service, whereas their mules have to be fed continually, whether in service or not. All these things taken into consideration show a vast advantage for the truck. The truck is painted in the regular army colors, with the regulation U. S. sign and Q. M. D. for the quartermaster's division. The test will last 30 days.

PRIVATE TRUCKS PERFORM WELL

Private owners showed their interest in the recent New York commercial test by entering twenty machines, only one being of the gasoline type. The Central Brewing Co. and P. Daussa & Co., to demonstrate the permanency of investment, entered their two oldest machines, Mary Ann, of the Central Brewing Co., being 9 years old, and Macaroni, of Daussa being 7½ years old, both of the General Electric make. Although neither is ordinarily called upon to do more than 25 miles, both did over 30 on the first day and on the second day Mary Ann went through without boosting and finishing strong.

Details of the seventeen General Electric machines actually taken from service have been collected and form an illustration of the varied character of work required. The New York Edison Co., entering five machines, give data as follows:

The 1,000-pound wagon averages about 40 miles per day, making about thirty-five stops and delivering from 800 to 900 lamps between 8 in the morning and 5 in the afternoon. It has not lost a day since being put in commission, January 7, 1910.

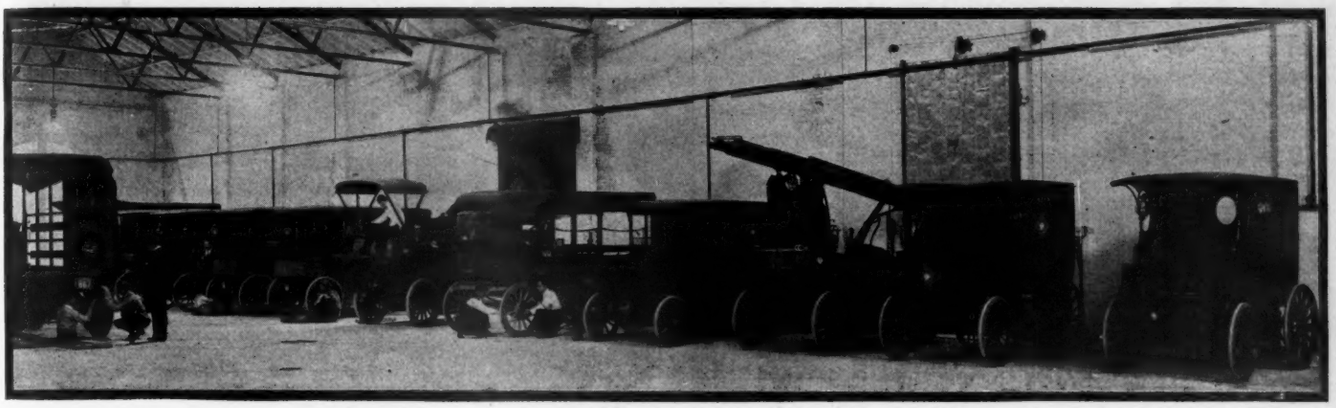
The 2,000-pound repair wagon is used by the overhead line department, carrying both material and men, averaging 35 miles daily, although often doing from 45 to 50. This truck has lost no time since purchased in July, 1909. The 2-ton truck is used in handling important freight between stations and averages about 40 miles per day. The 3½-ton, equipped with a hoist, is used in setting poles and has recently completed placing 192 on the grand concourse and has handled five poles per hour. Last winter this truck was used for a most unusual work, that of thawing water pipes. In one case it saved the shut-down of a factory after the owner had spent about $1,000 trying to get his water mains cleared. The Edison truck did the work in 7 minutes.

The 5-ton truck is used by the underground cable department, being equipped with a winch and has pulled as high as 4,000 feet a day of the heavy cable, about 12 pounds per foot. The 5-ton truck of the Brooklyn Edison Co. also is a cable machine and has been used for some time, particularly in connection with the Coney Island distribution. This truck during one of the periods of heaviest loads made a total of 54 miles in 1 day. On other days mileage is lower, the power being used for cable hauling.

The Apmann & Meyer 2,000-pound bread wagon averages about 36 to 38 miles daily, and the same driver is now doing nearly twice the work formerly done with horses.

The Borden Condensed milk wagon, a

FLEET OF DAIMLER LOAD TRAINS IN SERVICE OF BAVARIAN ARMY



INTERIOR VIEW OF UNION ELECTRIC CO.'S TRUCK GARAGE IN ST. LOUIS

3½-ton machine, is used in handling about 250 cases of bottled milk. This truck does about 38 miles a night. The Guinnes Stout wagon of Alex. D. Shaw has replaced four horses and Mr. Shaw stated that the 2 days out of service would cost him $30 a day extra expense beyond what the cost of operating the electric would have been.

The 2,000-pound General Electric machine is used in special delivery work, and although its mileage is low—28 miles daily—it required the introduction of two light horse wagons to take care of customers in the usual fashion, simply because horses cannot cover the ground as rapidly as the power vehicle. The 5-ton truck of the Central Brewing Co. does from 35 to 38 miles daily, handling a load of fifty half barrels. The 1,000-pound wagon entered by the General Vehicle Co.

WILL HANDLE FREIGHT

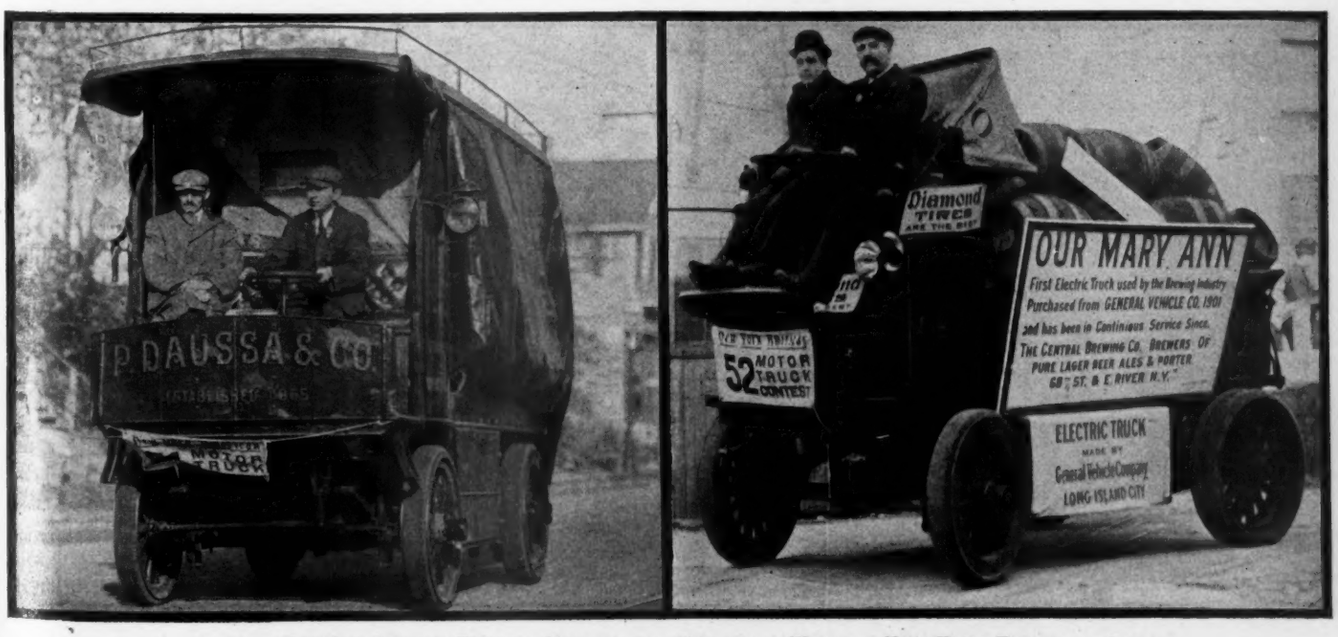
Since the settlement of the street car strike in Columbus, O., the Columbus Motor Car Transportation Co., incorporated, with a capital of $100,000, to operate omnibus lines to compete with the Columbus Railway and Light Co., has decided to bid for freight transportation instead of moters of the company relative to securing passenger business. A number of the large business houses of the Buckeye capital have been approached by the pro- freight transportation contracts. Motor freight wagons will soon be placed in service in the city, according to the promoters of the corporation.

NEW OREGON CONCERN

The following have recently incorporated the T. J. Thorp Mfg. Co., of Corvallis, Ore.: W. E. Buchanan, president; M. S. Bush, vice-president; F. L. Kent, secretary, and W. P. Lafferty, general manager, all business men of Corvallis, Ore. The capitalization is $100,000. This company will manufacture a new motor truck, the invention of General T. J. Thorp, which recently has been completed and successfully demonstrated in Corvallis, Portland, Ore., and Spokane, Wash. The leading feature of the machine is that it can turn in its own length; another is the fore-wheel drive, in addition to rear-wheel drive. By an automatic device, the power can be diverted from the rear wheels and concentrated on the fore wheels or just the opposite as occasion may demand. The steering apparatus is operated by power. By a slight turn of the steering wheels, power is thrown on the steering machinery, turning it little or much at the discretion of the operator. When in turning around or in making sharp turns, the steering gear is turned to an angle of 35 degrees, an automatic mechanical device throws the power off the rear wheels onto the fore ones, whereby all strain is taken off the tires, making the rear wheels merely trailers. The front wheels are then at right angles with the rest of the truck. The four-wheel and stearing gear construction is known as the turn-table construction.

INDIANAPOLIS PROGRESSIVE

Within a short time, Indianapolis will have a fire engine house wholly equipped with motor vehicles, and for that reason it is to be built smaller than the usual fire engine house. The building will be a new fire headquarters, which will be equipped with a car for the fire chief, a squad wagon carrying eight men, a chemical and hose, a truck for the fire alarm telegraph system and possibly a motor-driven engine. The city has announced its intention of equipping the fire department as rapidly as finances will permit with motor vehicles.



TWO OLD GENERAL ELECTRIC TRUCKS THAT PERFORMED WELL IN NEW YORK TEST

NEW PATTERN SHOP IN THE WHEELER & SCHEBLER CARBURETER PLANT, WHERE ALL MASTER PATTERNS ARE MADE

Among the Makers

OPENS Detroit Branch—The Muncie Gear Works has established a Detroit office, with Henry H. Smith & Brother, 252 Jefferson avenue, as direct factory representatives, where will be carried a line of parts.

Garden Show Poster—A novel and striking poster soon will be visible in New York city and vicinity advertising the fact that the eleventh show is to be held in Madison Square garden January 7 to 21, under the auspices of the Association of Licensed Automobile Manufacturers. The poster depicts a natty girl in motoring costume with arms uplifted, holding a banner on which are printed the letters A. L. A. M. From one side of the picture she is gazing at a racing car which bears the year 1911 on its radiator. On the whole, the picture gives one an impression of a fleeting comet of which the motor car forms the nucleus. The general idea is indeed a luminous method of informing the public of the greatest motor car exposition to be held in this country for 1911.

Badger Brass Change.—Charles M. Hall, who resigned as general sales agent of the Badger Brass Mfg. Co., Kenosha, Wis., about a year ago to become general manager of the C. M. Hall Lamp Co. of Detroit, Mich., has resigned to accept the position of general sales agent for the Billings, Chapin Co. of Hartford, Conn. The change will be effective January 1. William N. Anklam, a former Badger Brass man, who went to Detroit as office manager for the Hall company, has been appointed general manager to succeed Mr. Hall. Warren French, also of Kenosha, who was factory manager, has resigned. The Detroit company will be reorganized, it is understood.

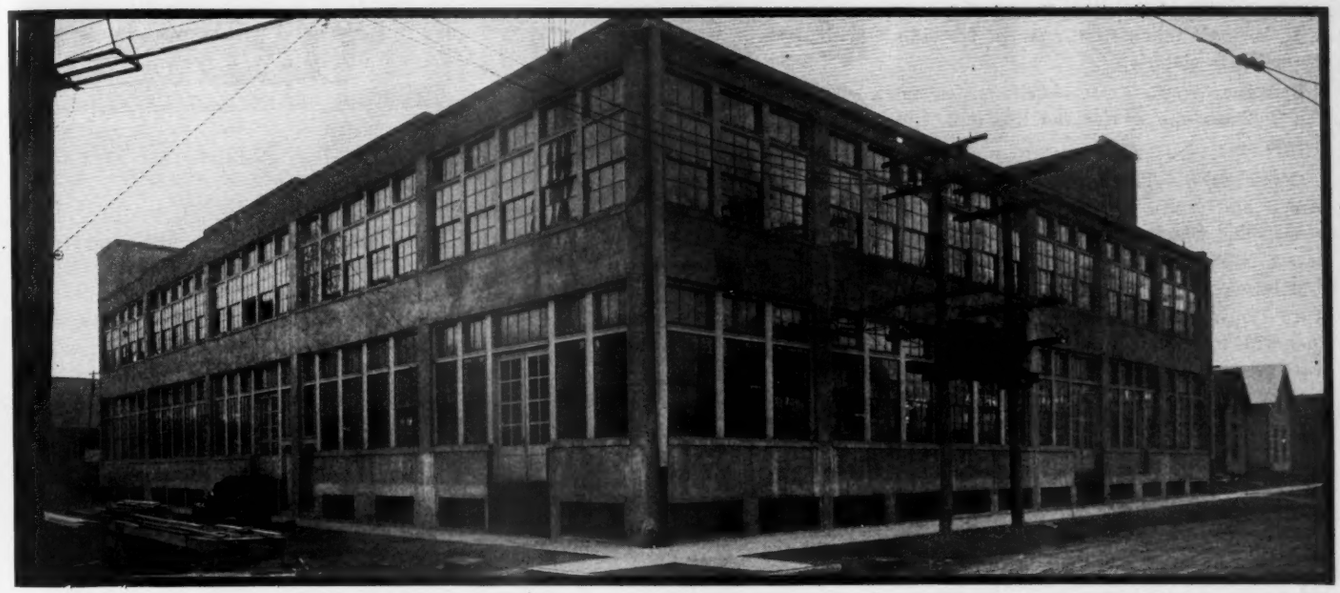
ADDITION TO FOUNDRY AT WHEELER & SCHEBLER PLANT

Dickerson Changes—C. W. Dickerson, formerly vice-president of the Columbia Trust Co. of Middletown, Conn., and at one time president of the Sterling Cycle Works, has become identified with the executive force of the Timken Detroit Axle Co. and has assumed the position of assistant treasurer.

Creditors' Committee Reports—The creditors' committee of the Standard Automobile Supply Co. of Chicago, of which John H. Kelly is chairman, reports that a proposal has been made to settle at approximately 62½ cents on the dollar in cash, but that it expects a better proposal. The assets are listed at $114,353.70 and the liabilities are $110,142.34.

St. Paul Will Hold Show.—To arouse interest in the motor business and to stimulate buying the St. Paul dealers are to have their first show this winter and it is to be purely a local exhibition, except that Minneapolis companies having branches and agencies in St. Paul will make showings. The date of the show, which is to be in the Auditorium, is January 25-28.

Kansas City Trade Changes—The Dodge Motor Co. has taken on the Alco line. The Warren Motor Sales Co. has moved to a new location at 509 East Fifteenth street. The Lambert Motor Co. now has the agency for the Pullman. The Western Motor Sales Co., selling the Overland, with the office of H. G. Kirkland, western distributor, is now at 1521 Grand avenue. The Monarch Motor Co., former agent of the National and Cole, is selling out stock preparatory to dissolution. There is a new concrete,



WHEELER & SCHEBLER CARBURETER PLANT AT INDIANAPOLIS—NEW ASSEMBLY BUILDING

and Dealers

steel building rising at Sixteenth street and Grand avenue, apparently designed for occupancy by a motor firm, the prospective tenancy of which is a mystery.

Salzman Goes to Mishawaka—George R. Salzman, head of the service department of the E. R. Thomas Motor Co. of Buffalo, N. Y., has resigned to become factory manager of the American Simplex plant at Mishawaka, Ind. The change becomes effective December 1.

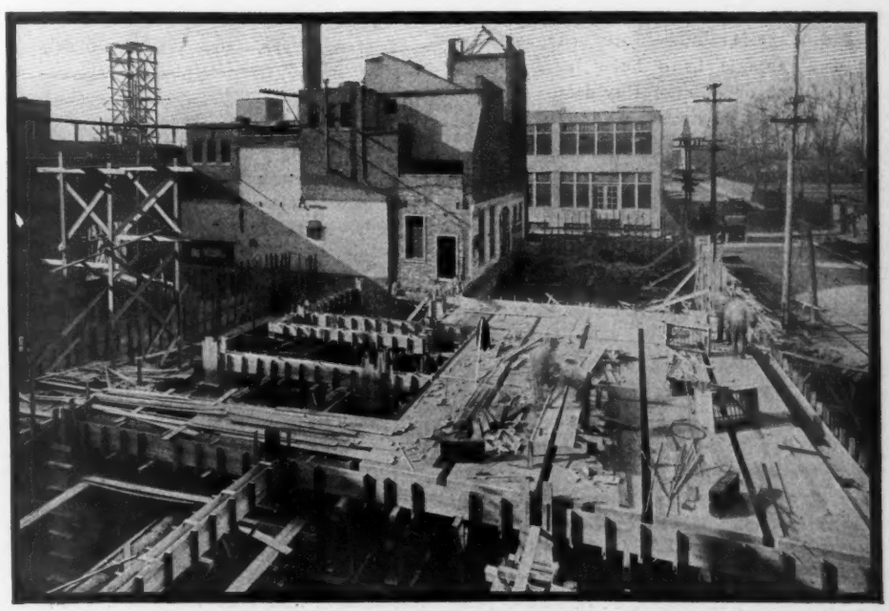
Fiat People Go Home—G. Agnelli, head of the Fiat concern at Turin, who has been in this country for some time, sailed for home last week, accompanied by Felice Nazzaro. The latter has been organizing the testing force at the Poughkeepsie plant of the Fiat concern since the race at Savannah and will return there some time in January.

Toledo Electric Deal—Negotiations are pending which if successfully concluded will give Toledo one of the largest electric carriage plants in the country. The plan proposes to merge the Ohio Electric Car Co. with the Milburn Wagon Works and committees of the two companies have been working on the proposition for some time. The Milburn company has a capital of $700,000 and is engaged in the manufacture of farm wagons, buggies and motor car bodies. The Ohio Electric Car Co. was organized about 2 years ago with a capital of about $75,000, which was later increased to $150,000. Its officers are: President, A. M. Chesborough; vice-president, R. R. Lee; treasurer, James Brown Bell; secretary, F. D. Suydam, Jr., and general manager, H. P. Dodge. Heretofore the Milburn company has manufactured the bodies for the cars turned out by the Ohio electric, its motors and other parts being made in other plants. It is now planned to have the new company make all of the parts used in the car. If the merger is not successfully concluded the Ohio electric will expand and will build a new plant of its own in the near future.

Matlack with Ajax-Grieb—J. C. Matlack has been appointed secretary and general manager of the Ajax-Grieb Rubber Co. He formerly was president of the International Rubber Co. at Milltown, N. J., and later first vice-president and general manager of the Michelin Tire Co. The Ajax-Grieb Rubber Co.'s executive offices now are located at 1777 Broadway, New York city, with the factories at Trenton, N. J. By New Year's day the New York offices will be moved to larger quarters across the street in the new Ehret building.

Waverley Chicago Branch—A Chicago branch of the Waverley Co. has been opened in Chicago. Temporarily it is at 1714 Michigan avenue, but is soon to be moved to new quarters farther south on the same street. In charge of the new branch is J. C. Cooley.

Has a New Policy—Hereafter all the products of the Jacobson-Brandow Co. will be sold through jobbers or representatives in various parts of the United States and Canada. Among the appointments are the following: Pettingell-Andrews Co., Boston; J. Stewart Smith, 1775 Broadway, New York city; Horace C. Mills, Detroit, Mich., and C. A. Mattison, Pittsfield, Mass. The company deals in ignition devices.



ANOTHER VIEW OF THE SCHEBLER PLANT

Brief Business

ST. LOUIS, MO.—The Superior Motor Co. has taken the agency for the Hupp-Yeats electric.

Spokane, Wash.—L. D. Hewitt has taken the Spokane agency for the Reo and Apperson cars.

Columbus, O.—The Love garage at High street and Sixth avenue has opened a paint shop, which has a capacity of seven cars.

Milwaukee, Wis. — The Abresch-Cramer Auto Truck Co. has enlarged its facilities and will increase its 1911 output by at least 25 percent.

Cushing, Neb.—Glass & Evans, agents for the Ford, will not only have a garage here, but will also have branch houses at Grand Island, Hastings and St. Paul, Neb.

Baltimore, Md.—The General Auto Co., which handled the Parry car in Baltimore, has closed out its headquarters on Eager street between Charles and Cathedral streets.

Portland, Ore.—With Dr. G. E. Watts as president and Ed Suitor as manager, the East Side Automobile Co. has been reorganized. It will continue to handle the Knox, Premier and Moline cars.

Watertown, Wis. — The Copeland-Roach Motor Co., representing the Rambler and other cars in four central Wisconsin counties, will open a branch at Madison, the state capital. E. T. Hayhurst will be manager.

Buffalo, N. Y.—The latest addition to the local row is the new store of the Werick Brothers Motor Co., recently opened at 637 Main street, handling the Schacht commercial and pleasure cars.

Buffalo, N. Y.—Edward P. Seeber has severed his connection with the Pierce-Arrow Motor Car Co. after 5 years of service and has opened a store at 704-706 Main street in which he will carry an extensive line of accessories.

Indianapolis, Ind.—Motor car agencies in Indianapolis have been increased by the advent of Samuel Davidson, who has secured the 1911 agencies for the Whiting and the Imperial. Mr. Davidson has leased a salesroom at 16 South Capitol avenue.

Toledo, O.—The Rassel Motor Co. was recently incorporated with a capital stock of $125,000 to do a car manufacturing business. The incorporators of this latest Toledo concern are Edward C. Rassel, Richard D. Longan, William E. Brown, Edwin Tait and Nicholas W. Rassel.

Boston, Mass.—The Massachusetts Motor Co. has been formed in Boston and incorporated under the laws of Massachusetts to handle the Oakland car in the Bay State east of Hampshire, Franklin and Hampden counties. G. B. Williams is president, F. D. Stranahan, vice-president, W. H. Tucker, treasurer, F. S. Snow, secretary and F. A. Daly, manager. Salesrooms have been opened at 591 Boylston street.

Red Oak, Ia.—Aleck Peterson has taken the agency for Buick cars, and is erecting a large new garage.

Milwaukee, Wis.—The Johnson-Burnham Sales Co., representative of the Auburn, has been appointed agent for the Marion.

Boston, Mass.—An agency for the Enger car has been opened in Boston with L. J. Coburn in charge. It is known as the Coburn Motor Sales Co.

Spokane, Wash.—The Archer, Coombs & Child Co., dealer in supplies, is now known as the Child, Day & Churchill Co. and has moved into new quarters at 1227 First avenue.

New York—Charles E. Miller announces the removal of his Brooklyn branch from 1392 Bedford avenue to more spacious quarters at 1421 Bedford avenue. Mr. Miller is a manufacturer and jobber of supplies.

Cleveland, O.—F. S. Gassaway, formerly manager of the New York branch office of the Willard Storage Battery Co., has been transferred to the main office here, where he will act as general manager of sales. In addition to the New York branch, the Willard company has branches at Detroit, Chicago and Mexico City.

Seattle, Wash.—Fully equipped with all the modern conveniences, J. W. Leavitt & Co., the new agents for the Overland car in Seattle, have one of the finest branch stores in this city. The building, located at Belmont avenue and East Pike street, has two stories. The space in the upper and lower portion of the building is extensive enough to accommodate 100 cars.

Boston, Mass.—The American Simplex Co. of Boston, which has the agency for the Amplex, has been reorganized with F. R. Mosely as president, G. H. Phelps general manager and treasurer, and Albert W. Hills as secretary and sales manager. The salesrooms on Dartmouth street have been reconstructed and a garage and repair department has been secured on Stanhope street.

Cincinnati, O.—H. S. Leyman, of the Leyman-Buick company, of this city, has returned from a trip through eastern Kentucky, and reports having closed Buick agencies in Lexington, Ky., with Thomas B. Dewhurst; in Danville, Ky., with Leonard Kranz; in Winchester, Ky., with the Winchester garage; in Paris, Ky., with Yerkes & Kenny. Mr. Leyman says his company in all probability will place about 250 cars in the state of Kentucky this coming season, and that the motor car business has the most promising outlook in this locality, especially for good cars at medium prices.

Portland, Ore.—Frank Elkins and John A. Moore of Crook county hereafter will look after the Buick sales in that county.

Omaha, Neb.—R. D. Vaught, formerly with the Guy L. Smith Co., has become secretary of the H. E. Fredrickson Automobile Co.

Buffalo, N. Y.—J. A. Cramer, former local agent for the Mitchell and Courier cars, will handle the Stoddard-Dayton exclusively for the coming season.

Boston, Mass.—An agency has been opened in Boston for the Otto car. N. C. Smith and C. L. Costello, who have been connected with motor concerns there for several years, have formed the Otto Sales Co. and have opened headquarters at 165 Huntington avenue.

South Bend, Ind. — Ground has been broken by the contracting firm of Kemble & Kuehn for the new building which will be erected by Freyermuth & Maurer at Vistula and Washington avenues and St. Joseph street. When the building is completed it will be occupied by the United States Motors Car Co. as a garage and salesroom. The building will be but two stories at the present, although the founda-

Recent Incorporations

New York—Motors, Engineering and Sales Co., capital stock $200,000; to manufacture and deal in motor vehicles, engines, etc.; incorporators, C. Griswold, W. S. Jewell and J. L. Breese, Jr.

New York—Randerson Auto Parts Co., capital stock $25,000; to manufacture and deal in motor car parts and accessories; incorporators, J. F. Randerson, E. G. Trimpar and R. P. Herrick.

New York—Simmons Automobile Co., capital stock $10,000; to manufacture and sell motors, engines, motor cars, etc.; incorporators, John G. Simmons, Geo. L. Lewis and Daniel E. Wing.

Brooklyn, N. Y.—Rudd, Inc., capital stock $10,000; to operate, sell and rent taxicabs, motor cars, etc.; incorporators, Samuel H. Miskend, Gladys L. Fitch and Franklin Kelly.

Brooklyn, N. Y.—Brooklyn Auto Radiator Co., capital stock $10,000; to manufacture motors, motor cars and accessories; incorporators, Isidor Cooper and Joseph Cooper.

Buffalo, N. Y.—Buffalo Motor Sales Co., capital stock $10,000; to deal in mortor cycles, Motor cars, conduct garage, etc.; incorporators, Leon J. McCullough, John H. McCullough and Millard F. Tallmage.

Jersey City, N. J.—Alden Sampson Mfg. Co., capital stock $2,500,000; to manufacture motors, carriages, wagons and flying machines; incorporators, K. K. McLaren, H. E. Tobey, J. A. Dailey, L. R. Jillson and W. R. Watson.

Jersey City, N. J.—De Hart Motor Car Co., capital stock $10,000.

Jersey City, N. J.—Cook's Garage and Renting Co., capital stock $25,000; to conduct motor car garage; incorporators, J. Thomas Cook, George L. T. Gibb and Carrie H. Cook.

Jersey City, N. J.—Motor Sales Co. of New Jersey, capital stock $25,000; to deal in motor cars and supplies; incorporators, A. Greenbaum, A. Conquest, G. F. Reynolds and W. S. Higgins.

Richmond, Va.—J. A. Grasberger Mfg. Cor., capital stock $60,000; to manufacture and sell motor cars, buggies and flying machines; incorporators, J. A. Grasberger, E. P. Foote, A. W. Foote and John B. Welsh.

Philadelphia, Pa.—Nance Motor Car Co., capital stock $40,000.

Harrisburg, Pa.—Steitz Motor Car Co., capital stock $5,000.

Announcements

tion will be constructed capable of supporting a ten-story structure.

Auburn, Neb.—Furlong & Codding, have taken the agency for the Auburn car, through the Omaha Automobile Co.

Grand Rapids, Wis.—D. M. Huntington, storage and repairs, has decided to enlarge his shop because of the growth of his trade.

Madison, Neb.—William Basse, agent for the Auburn car, has built additions to his garage only constructed this year, which more than double its size.

Toledo, O.—The Kinsey Mfg. Co. has moved into its new quarters adjoining the present plant on Central avenue. The plant vacated by this concern is to be used by the Overland Automobile Co. as the home of a body plant with a capacity of fifty bodies a day. This plant will give employment to 350 additional men.

Waupun, Wis. — The new building erected by the C. A. Shaler Co., of Waupun, Wis., manufacturer of the Shaler electric vulcanizer, is now completed. The building is designed by C. A. Shaler and the highest ideals of art in factory construction are embodied in it. The exterior is in gray-green stucco, with a large outside chimney of red brick. The building is on the main line of the Milwaukee road and has excellent shipping facilities.

Spokane, Wash.—The Motor Sales Co., 707 Frost avenue, hereafter will represent the Winton in the Spokane territory.

Hastings, Neb.—E. A. Brandes, formerly of Jones & Brandes, of this city, will handle Auburn cars for this territory this year, having signed a contract with the Omaha Automobile Co.

New York—The Croxton-Keeton Motor Co., of New York, will control the sale of Parry cars in the city of New York for the season of 1911. The sales rooms are located at 1662 Broadway.

Cleveland, O.—The Kraus Motor Car Co. has been incorporated, with an authorized capital of $5,000, to operate a garage and repair shop, by J. M. Ulmer, E. T. Kraus, J. M. Bernstein, Heben Klatz and Fred E. Kraus.

Cleveland, O.—The Quiggle Auto Co. has been incorporated, with an authorized capital of $10,000, to operate a sales agency and garage, by C. V. Quiggle, Samuel L. Henry, Charles S. Craskey, J. C. McMichael and E. M. Goodwin.

Wilmington, Del.—Peter C. Hansen and Edmund S. Smith, who have been trading as the Delaware Garage Co., have dissolved partnership. Mr. Hansen will continue the business. The company has a large garage at 815-823 Tatnall street.

Buffalo, N. Y.—The Frey Auto Supply Co., manufacturer of overhead vehicle washers and car parts, was incorporated recently, with an authorized capital of $25,000. The concern has been doing business for some time in this city, but its growth was so rapid that John W. Frey, its founder, incorporated it.

Philadelphia, Pa.—H. E. Allmang, for many years connected with the sales force of the Autolight and Motor Supply Co., was recently appointed manager of the motor car accessory department of the Keim Supply Co., 1227 Market street, Philadelphia, Pa., which is a consolidation of the George deB. Keim Saddlery Co. and the Autolight and Motor Supply Co.

St. Louis, Mo.—The Keyes & Marshall Brothers Livery Co. has taken over the St. Louis Taxicab Co. The deal involved about $100,000. The Keyes & Marshall Brothers Co., which has long been one of the principal livery companies in St. Louis, has closed some of its barns because of the inroads made by taxicabs. John D. Marshall is now president of the St. Louis Taxicab Co., Merritt H. Marshall is vice-president and Sylvester P. Keyes is secretary. Charles C. James and John M. James, who disposed of their interest in the taxicab company, say that they will probably start a rapid delivery business in St. Louis, using motor cars.

Lennox, S. D.—C. C. Kuper will open a garage and is making arrangements for the sale of the Overland and E-M-F cars.

Spokane, Wash.—Samuel W. Harvey, Pacific coast distributor of the Gramm truck, has placed the eastern Washington agency with the Regal Garage Co. of Spokane.

St. Louis, Mo. — F. L. Hendricks announces that he and C. A. Poole have taken over the interest of W. E. Corby in the White Garage Co. and will make several changes in the business.

Buffalo, N. Y.—Sanderson & Burghardt have taken the local agency for the Firestone-Columbus. The salesrooms are at 727 Main street, in the quarters formerly occupied by the Ford Motor Co.

Marinette, Wis.—The Buick Motor Co. expects to build a large garage and home for its agency at Marinette. The territory includes a large part of northeastern Wisconsin and the southern part of the upper peninsula of Michigan.

Lancaster, Wis.—The Overland Service Co. has absorbed the Avery Auto Co., of this city, and has retained F. V. Avery as garage manager, J. C. Harehroad as president and general sales manager, and E. J. Bennett as secretary and treasurer.

Bryan, O.—G. A. Knepper has purchased the repair shop of Clarence Bishop and will continue the business. Bishop has accepted a position with the Bryan Hardware Co., where he will have charge of the company's interests as agent for Ford cars.

Houston, Tex. — The Bering Tire and Rubber Co. has secured the state of Texas agency for the Empire Tire Co. August C. Bering, Jr., manager of the new concern, has for the past several years been with the Texas Rubber and Supply Co. of Houston and Dallas.

Cleveland, O.—A. W. Woodruff, until now connected with the local sales department of the F. B. Stearns Co., will assume the position of general sales manager of the Southern Motors Co., Nashville, Tenn., manufacturer of Marathon cars, on December 1.

Seattle, Wash.—The new Seattle branch of J. W. Leavitt & Co., of California, is located at Belmont avenue and Pike street, with Thomas White, formerly identified with the Pope Mfg. Co., of Toledo, in charge. This company also has established a large branch in Portland controlling the whole of the Pacific coast for the Overland.

Milwaukee, Wis.—The W. R. Sherin Co., painting and repairing, has been consolidated with the big carriage manufacturing firm of Shueler Brothers, 247-249 Milwaukee street. W. R. Sherin will have charge of the new department of painting and repairs, 7,000 square feet of floor space being added to accommodate the new division.

Recent Incorporations

Boston, Mass.—International Automobile Association, capital stock $100,000; motor car supplies; incorporators, William T. Morgan, Sheldon M. Booth and Leslie K. Stoors.

Austin, Tex.—Ranger Motor Car Co., capital stock $16,000; incorporators, C. C. Ross, L. R. Lilley and E. C. Lilley.

Peoria, Ill.—Pekin Garage and Outing Co., capital stock $5,000; to manufacture, rebuild, repair, buy, sell, rent and store motor cars and conduct general garage; incorporators, Walter E. Green, Herman Kaemmerling and William R. Kaemmerling.

New York.—Automobile Safety Lamp Co., capital stock $500,000; to manufacture devices to prevent accidents; incorporators, G. M. Barlach, W. G. Chittick and Francis Knowles.

New York—Strapless Tire Holder and Trunk Co., capital stock $10,000; to manufacture accessories, motor car holders for tires and trunks, etc.; incorporators, Bernard A. Alperin, Sidney Kallis and Joseph Berg.

New York—Ward Motor Vehicle Co., capital stock $200,000; to manufacture motors, engines, machinery, etc.; incorporators, C. A. Ward, W. B. Ward and L. S. Kafer.

Boston, Mass.—Massachusetts Motor Co., capital stock $20,000; incorporators, G. B. Williams, Frank D. Stranahan, William H. Ticker and Francis S. Snow.

Boston, Mass.—J. H. Peckham Co., capital stock $3,000; incorporators, John H. Peckham, Joseph F. Smith and Edna M. Smith.

Utica, N. Y.—Utica Electric Garage Co., capital stock $6,000; directors, W. R. Schiller, J. A. Harding and E. G. Brewer.

Columbus, Ohio—Kraus Motor Sales Co., capital stock $5,000; incorporator, E. F. Kraus.

Philadelphia, Pa.—Manchester Garage Co., capital stock $10,000.

Philadelphia, Pa.—Hale-Knox Motor Co., capital stock $13,000; incorporators, P. C. Knox, Jr., and R. T. Tindle.

Buffalo, N. Y.—Lutz Motor Co., capital stock $20,000, to deal in engines, motors, motor cars, motor cycles and motor boats; incorporators, E. J. Hussey, W. E. Pennypacker and W. A. Lutz.

Chicago, Ill.—Sober-Conway Co., capital stock $5,000; to manufacture vehicles and aeroplanes; incorporators, P. Steele, P. Frank O'Malley and Abe LePlane.

Legal Lights and Side Lights

MODEL GARAGE ORDINANCE

THE model garage ordinance, the first unit of the new building code for the city of Milwaukee, Wis., has been introduced in the common council and now awaits consideration.

The ordinance defines a garage as follows: A building or that portion of a building in which a vehicle or vehicles using or carrying volatile inflammable liquids for fuel or power, is or are kept for use, repair, rental or live storage, or for demonstrating purposes, and any part of said building that is not separated therefrom by unpierced fire walls, floors and ceilings. Nothing in this section shall be construed to mean places where motor cars are kept when drained, solely for exhibition or sale purposes, or dead storage.

A motor car is defined as follows: A self-propelled vehicle.

A garage must be of fireproof construction if intended for the use of more than four cars, or if built within 10 feet of any other building, or where any persons are assembled or employed other than employes of the garage.

Storage tanks shall not be installed until application with plans and specifications showing full details of location and construction of tank and all connections have been filed with and approved by the inspector of buildings. Storage tanks shall not be placed upon or under any street, or any part of highway or alley or sidewalk; under any building that is more than two stories high, or under any building that is more than one story high and has a cellar or basement. Such tanks shall have a capacity not in excess of 300 gallons. They must be made of iron or steel galvanized of at least No. 12 United States standard gauge; be coated on the outside with rust-resisting material; have joints tightly riveted, calked, soldered, brazed or welded; be tested by hydrostatic pressure to 25 pounds to the square inch. All pipe connections must be at the top and no vent or filling pipes to drop lower than the top of the tank.

There shall not be more than 600 pounds of calcium carbide in air-tight containers in any garage; said carbide in no case shall be placed in a cellar, but only on the floor above the basement and to be placed 6 inches or more above the floor.

Movable incandescent electric lights in a garage shall be protected by metal cages, and shall be fitted with keyless sockets. All electric switches and plug receptacles shall be permanently located at least 4 feet above the floor, and all switches and safety fuses shall be grouped and placed within a fireproof cabinet.

Electric charging apparatus shall not be installed in a garage, but may be kept in separate room where there is no inflammable substance; said room to be protected by unpierced fire walls between the garage and charging room. No open flame shall be placed less than 7 feet above the floor.

No volatile inflammable liquids shall be used in a garage for cleaning or for any other purpose whatsoever, other than filling tanks of motor cars; allowed to run upon the floor or to fall or pass into the drainage system of the garage; put into or removed from the tank of a motor car while any light or fire of the same is burning; nor shall such liquids be carried or kept in an open vessel.

Sand shall be kept to the amount of 500 pounds in boxes provided with hand scoops or fire buckets, in appropriate places for immediate use for fire-extinguishing purposes only, and shall also be kept in convenient receptacles for use in absorbing any waste oil.

The ordinance is not retroactive and applies only to garages built after the date of its passage. Changes in existing garages can be made when necessary by the order of the building inspector.

The penalty for violating the ordinance or non-compliance therewith is a fine of not less than $50 or more than $500, with the alternative of imprisonment in the Milwaukee house of correction for not less than 6 months or more than 1 year, or both, at the discretion of the court.

The common council has been working on the ordinance for several years and believes that it is a model.

AGAIN THE WHEEL TAX

Like Banquo's ghost the obnoxious motor car wheel tax forced upon the motorists of the District of Columbia by congress will not down. The tax will not be repealed, according to an announcement of the district commissioners, who have instructed the assessor to proceed to the collection of the tax upon motor cars according to their seating capacity under the law of 1910. The commissioners received a letter from W. S. Duvall, president of the Automobile Club of Washington, asking that they recommend to congress the repeal of the wheel tax, and that in the meantime the assessor be directed to refrain from prosecutions. The suggestion, however, does not meet with the approval of the board. In reference to the tax the following report was submitted to the commissioners by the assessor:

"The assessment against motor cars, known as the wheel tax, first appeared in the act of March 3, 1909, and again in the appropriation bill of this year. LeRoy Mark sought to restrain the commissioners from collecting the tax under the act of 1909, and this was dismissed by the appellate court upon the ground that Mark had not taken the proper legal procedure, the court declining to determine whether the act of 1909 imposing an annual tax on motor cars was unconstitutional, or otherwise violated the rule of equality and taxation. It is the opinion of this office that very little can be done to collect the 1909 tax without additional help from congress. It is intended, however, to enforce the collection of the tax under the law of 1910, which allows this office to bring offenders into the police court and obtain the imposition of a fine against persons who refuse to pay the tax."

The Automobile Club of Washington will put up a fight against the imposition of this tax.

LOW-GEAR NOISE FRIGHTENING

The defendant was operating a motor car at low speed along a street when she approached a team going in the same direction. The noise of the machine was greater than that of a car running on high gear, but not greater than that usually produced by a car running on low gear. There was nothing in the appearance of the machine specially calculated to frighten horses, and defendant received no warning that the team was frightened, or likely to be frightened by the machine, as she endeavored to pass; but as she did so the team shied, breaking a tongue of the vehicle, and ran along the street, where they ran over plaintiff and injured him. The court in Simmons vs. Lewis, 125 N. W., Iowa, 194, held these facts insufficient to show actionable negligence on defendant's part. One operating a car has the same rights in the street as the driver of horses, and is liable for a resulting accident only where he fails to use the degree of care, as to speed and management of his machine, which the circumstances reasonably require.

OF INTEREST TO MAKERS

Archer & Co., having pledged a motor car chassis to plaintiff for a loan, obtained it from the plaintiff to deliver to the defendant to have a body placed thereon, the plaintiff surrendering the chassis on condition that Archer & Co. obtain from defendant and deliver to plaintiff a receipt therefor. Defendant executed a non-negotiable receipt for the chassis to Archer & Co. without notice of plaintiff's interest, which receipt was indorsed by Archer & Co. to plaintiff, after which defendant delivered the chassis and body to Archer & Co. without surrender of the receipt. It was held in Manny vs. Wilson, 122 N. Y. Sup. 16, that defendant, having delivered the chassis to Archer & Co., from whom he received it, was not liable to plaintiff for conversion.